Memoirs of the Museum of Comparative Zoölogy
AT HARVARD COLLEGE
VOL. XXXV. No. 4.

REPORTS ON THE SCIENTIFIC RESULTS OF THE EXPEDITION TO THE TROPICAL PACIFIC, IN CHARGE OF ALEXANDER AGASSIZ, BY THE U. S. FISH COMMISSION STEAMER "ALBATROSS," FROM AUGUST, 1899, TO MARCH, 1900, COMMANDER JEFFERSON F. MOSER, U. S. N., COMMANDING.

XVI.

REPORTS ON THE SCIENTIFIC RESULTS OF THE EXPEDITION TO THE EASTERN TROPICAL PACIFIC, IN CHARGE OF ALEXANDER AGASSIZ, BY THE U. S. FISH COMMISSION STEAMER "ALBATROSS," FROM OCTOBER, 1904, TO MARCH, 1905, LIEUT. COMMANDER L. M. GARRETT, U. S. N., COMMANDING.

XXVII.

THE SCHIZOPODA.

BY H. J. HANSEN.

WITH TWELVE PLATES.

[Published by permission of GEORGE M. BOWERS, U. S. Commissioner of Fish and Fisheries.]

CAMBRIDGE, U. S. A.:
Printed for the Museum.
JULY, 1912.

TABLE OF CONTENTS.

	PAGE
Introductory Remarks	177
Mysidacea	
Lophogastrida	
Chalaraspis Willemoës Suhm. . . .	181
Chalaraspis alata G. O. Sars, Pl. 1, figs. 1a–1l	182
Gnathophausia Willemoës-Suhm . .	184
Gnathophausia ingens (Dohrn) . . .	184
Gnathophausia gracilis Willemoës-Suhm	185
Gnathophausia zorea Willemoës-Suhm	186
Eucopia Dana	187
Eucopia unguiculata Willemoës-Suhm	187
Eucopia major H. J. Hansen	188
Eucopia sculpticauda Faxon	189
Mysida	
Boreomysis G. O. Sars	
Boreomysis media, sp. nov., Pl. 1, figs. 2a–2b	190
Boreomysis fragilis, sp. nov., Pl. 1, fig. 3a; Pl. 2, fig. 1a	191
Siriella Dana	192
Siriella thompsonii (H. Milne Edwards)	192
Siriella gracilis Dana	193
Siriella media H. J. Hansen	194
Siriella aequiremis H. J. Hansen . .	194
Hemisiriella H. J. Hansen	
Hemisiriella abbreviata, sp. nov., Pl. 2, figs. 2a–2c	195
Anchialina Norman	196
Anchialina typica (Kröyer)	196
Anchialina grossa H. J. Hansen . . .	196
Anchialina obtusifrons, sp. nov., Pl. 2, figs. 4a–4c	197
Gastrosaccus Norman	198
Gastrosaccus pacificus, sp. nov., Pl. 2, figs. 3a–3g	198
Euchaetomera G. O. Sars	199
Euchaetomera typicus G. O. S., Pl. 2, figs. 5a–5c	199
Euchaetomera tenuis G. O. Sars . .	201
Euchaetomera plebeja, sp. nov., Pl. 3, figs. 1a–1b	202
Cryptomysis, gen. nov.	203
Cryptomysis lamellicauda, sp. nov., Pl. 3, figs. 2a–2m.	204
Doxomysis, gen. nov.	205
Doxomysis pelagica, sp. nov., Pl. 3, figs. 3a–3g	205
Euphausiacea	206
Bentheuphausia G. O. Sars	206
Bentheuphausia amblyops G. O. Sars	206
Thysanopoda H. Milne Edwards . .	207
Thysanopoda tricuspidata H. Milne Edwards, Pl. 4, fig. 2a	208
Thysanopoda cristata G. O. Sars, Pl. 3, figs. 4a–4c; Pl. 4, figs. 1a–1h . .	209
Thysanopoda monacantha Ortmann, Pl. 4, figs. 3a–3c	212
Thysanopoda aequalis H. J. Hansen, Pl. 4, fig. 4a	214
Thysanopoda obtusifrons G. O. Sars, Pl. 4, figs. 5a–5f	215
Thysanopoda pectinata Ortmann, Pl. 5, figs. 1a–1m	218
Thysanopoda orientalis H. J. Hansen, Pl. 5, figs. 2a–2i	222
Thysanopoda cornuta Illig	223
Thysanopoda ? cornuta Illig., Juv., Pl. 6, figs. 1a–1e	224
Thysanopoda egregia H. J. Hansen	225
Nyctiphanes G. O. Sars	226
Nyctiphanes simplex H. J. Hansen, Pl. 6, figs. 2a–2i; Pl. 7, figs. 1a–1b .	227
Euphausia Dana	230
Euphausia eximia H. J. Hansen, Pl. 7, figs. 2a–2g	230
Euphausia recurva H. J. Hansen, Pl. 7, figs. 3a–3n	233

	Page
Euphausia diomedea Ortmann, Pl. 7, fig. 4a	235
Euphausia mutica H. J. Hansen	237
Euphausia brevis H. J. Hansen, Pl. 8, figs. 1a–1g	239
Euphausia pacifica H. J. Hansen, Pl. 7, figs. 5a–5b	241
Euphausia tenera H. J. Hansen	242
Euphausia gibba G. O. Sars, Pl. 8, figs. 2a–2b	244
Euphausia paragibba H. J. Hansen	246
Euphausia pseudogibba Ortmann	247
Euphausia distinguenda H. J. Hansen, Pl. 8, figs. 3a–3f	248
Euphausia lamellifera H. J. Hansen, Pl. 8, figs. 4a–4e; Pl. 9, fig. 1a	250
Euphausia gibboides Ortmann, Pl. 9, figs. 2a–2h	252
Euphausia mucronata G. O. Sars, Pl. 9, figs. 3a–3g	255
Pseudeuphausia H. J. Hansen	257
Pseudeuphausia latifrons G. O. Sars	257
Nematoscelis G. O. Sars	258
Nematoscelis microps G. O. Sars, Pl. 9, figs. 4a–4d; Pl. 10, figs. 1a–1b	259
Nematoscelis gracilis H. J. Hansen, Pl. 10, fig. 2a	261
Nematoscelis tenella G. O. Sars, Pl. 10, figs. 3a–3c	263
Nematobrachion Calman	264
Nematobrachion boopis Calman, Pl. 10, figs. 4a–4d	267
Nematobrachion flexipes Ortmann, Pl. 10, figs. 5a–5m	269
Nematobrachion sexspinosus H. J. Hansen, Pl. 10, fig. 6a; Pl. 11, figs. 1a–1i	272
Stylocheiron G. O. Sars	273
Stylocheiron carinatum G. O. Sars, Pl. 11, figs. 2a–2b	274
Stylocheiron microphthalma H. J. Hansen	277
Stylocheiron suhmii G. O. Sars, Pl. 11, figs. 3a–3b	277
Stylocheiron affine H. J. Hansen	278
Stylocheiron longicorne G. O. Sars, Pl. 11, figs. 4a–4b	279
Stylocheiron elongatum G. O. Sars	280
Stylocheiron abbreviatum G. O. Sars, Pl. 11, figs. 5a–5f	280
Stylocheiron maximum H. J. Hansen	283
Larval stages of Euphausiaea, Pl. 12	283
Thysanopoda sp. (T. monacantha aff.) Pl. 12, figs. 1a–1g	284
Euphausia distinguenda H. J. Hansen, Pl. 12, figs. 2a–2c	287
Nyctiphanes simplex H. J. Hansen, Pl. 12, figs. 3a–3f	288
Pseudeuphausia latifrons G. O. Sars, Pl. 12, figs. 4a–4b	290
Nematoscelis microps G. O. Sars, Pl. 12, figs. 5a–5c	291
Stylocheiron carinatum G. O. Sars, Pl. 12, figs. 6a–6d	293
The distribution of the Euphausiacea	295
Explanation of the Plates	

INTRODUCTORY REMARKS.

The collection dealt with in the present paper is extremely large, both as to the number of species, sixty-three, and especially as to the numbers of the specimens of the major part of the forms. A small portion of the material was captured by the late Alexander Agassiz near the Fiji Islands in 1897, a still smaller lot was secured during the trip of the "Albatross" in 1899–1900, but the vast majority has been collected by Dr. Agassiz in 1904–1905 in the Eastern Pacific. When we wish to get a closer insight into the whole topic it is, however, necessary to consider separately the two orders still not infrequently united under the name Schizopoda, viz. Mysidacea and Euphausiacea. And a comparison with the results of the exploration of the Dutch "Siboga" Expedition in the Indian Archipelago is interesting.

Of the order Mysidacea only twenty-three species are at hand, fifteen of which were secured in 1904–1905, while the remaining eight forms were exclusively gathered during the earlier trips just mentioned. Fifteen species in all from the Expedition in 1904–1905 is in reality a small number as compared with the number of species already known of this order. But the explanation of this fact is given below, and when we consider the order Euphausiacea the aspect is quite different. Of the last-named order the collection contains forty species, all with a single exception taken in 1904–1905 (some among them besides in 1899–1900 or off the Fiji Islands), but as only seventy-three species of this order are known from all seas, it will be seen that Dr. Agassiz during that single Expedition captured more than half of the world's fauna. The "Siboga" gathered only twenty-five species of Euphausiacea but no less than forty-seven species of Mysidacea. The explanation of this startling difference between the results of the Agassiz Expedition of 1904–1905 and the "Siboga" Cruise is that the Euphausiacea are nearly all true oceanic forms, while the majority of the Mysidacea either inhabit shallow water, or live pelagically, or not far from the bottom to a few hundred fathoms and within no very great distance from land. And while the "Siboga" in the main explored the straits and comparatively smaller seas between the innumerable islands in the Indian Archipelago, the Agassiz Expedition of 1904–1905 had the great majority of its Stations in the open ocean and far from any coast.

On the Mysidacea at hand some remarks may be added. The eight species not captured in 1904–1905 are small, pelagic forms taken near, or at most only some miles from the coast; four among them are new, and one of these differs so much from earlier known forms that it was necessary to establish a new genus for its reception. Of the fifteen species taken in 1904–1905 four are new; three of these belong to well-known genera, while a new genus is established for the fourth. But by far the most important gain was the capture of *Chalaraspis alata* (Will.-Suhm, MS.) G. O. Sars. This genus as defined by Sars with its single species has been described by him from a couple of sketches drawn by Willemoës-Suhm during the "Challenger" Expedition, as the single specimen had been lost. The genus belongs to the interesting suborder Lophogastrida, comprising in all only six genera; the Agassiz Expedition secured some specimens of Chalaraspis, and among them an adult male, thus rendering it possible to give a detailed account of this hitherto rather enigmatic type.

The material of Euphausiacea is, as already stated, very rich, and besides it is important in various respects. Among its forty species six could not be referred to earlier established forms, but in a paper published in May, 1911,[1] I have given preliminary descriptions of these, and other, new species. Perhaps one might expect that the number of undescribed species had been considerably higher, but in the years 1905–1910 I had established a comparatively large number of species of this order on animals from the Atlantic or the Indian Archipelago; the major part of the species of the order have a very large or frequently even vast distribution, and consequently more than three fourths of the Euphausiacea from the East Pacific were known before from the Indian Archipelago ("Siboga") or from the Atlantic, or from both Oceans. But the collection made it possible to extend our knowledge of the distribution of the major part of the species very much; furthermore, as the material, of nearly all the new species, and besides of several earlier established but hitherto imperfectly known species, is rich and generally well preserved, it was possible to give a full account of these forms. And without entering into other points elucidated by the collection, for instance, the distribution of many of the species within the area explored, geographical variation of some forms, etc., another

[1] H. J. Hansen: The Genera and Species of the Order Euphausiacea, with Account of remarkable Variation. Bull. Mus. Océan. Monaco, No. 210.

consideration ought to be pointed out. In the Synopsis mentioned (1911) I set forth several reasons for the belief "that comparatively few, probably not a dozen, species in the oceans of the globe are still undiscovered." And if that view be correct it must be admitted that the results of the Agassiz exploration in 1904–1905 are as to this order of Crustacea wonderfully rich, because during that trip thirty-nine species were collected, thus a little more than half of the species hitherto known — and not far from half of the species really existing!—The collection contains besides a large number of larvae, of Euphausiacea, but on this topic it may be sufficient to refer to my remarks in the chapter on the larval stages (p. 283–294).

As to the classification of the Mysidacea and some characters in the Euphausiacea — especially the important copulatory organs of first pair of pleopods in the male — I may refer to the account in my paper on the "Siboga" Schizopoda frequently quoted on the following pages. Only a few points may be added. Recently I found that in some genera (Thysanopoda, Nematoscelis, and Nematobrachion) the maxillulae afford valuable specific characters or characters for groups of species belonging to the same genus, furthermore that in a few genera the maxillae show specific differences of some interest, finally that in the genus Nematoscelis the thoracic legs afford excellent characters for dividing the genus into two natural groups.— The nomenclature of the cephalothoracic appendages in the two orders is identical with that applied in the "Siboga" paper.

The geographical distribution of each species is mentioned. I have attempted in all cases to give a full abstract of all trustworthy statements in the literature, but as to several species of various genera (Euphausia, Nematoscelis, Stylocheiron) most of the earlier statements had to be discarded as the species in question were "collective." I have added a good many statements based on the material of the Copenhagen Museum, but do not think it well to insert still unpublished results based on collections to be reported on in the near future, namely those from the Swedish Antarctic Expedition, from the U. S. National Museum, etc.

And now I may express my deep regret that Dr. A. Agassiz did not live to see the publication of this paper, because it would certainly have been a satisfaction for that great explorer to see how rich his collection of these groups of Crustacea and especially of the oceanic Euphausiacea in reality was and how important it proved for the advancement of this branch of zoölogical science.

Finally I desire to render my sincere thanks to the authorities of the Museum of Comparative Zoölogy for their friendliness, and especially for allowing me to employ my two very able countrymen, Mr. T. N. Möller, the engraver, and Mr. J. Bech, the copper-plate printer, for the reproduction of my drawings.

Copenhagen, Sept. 18, 1911.

THE SCHIZOPODA.

I. The Order MYSIDACEA.

A. Suborder LOPHOGASTRIDA.

CHALARASPIS Willemoës-Suhm (1875).

Description.— Integument soft. Carapace thin, submembranaceous, without processes, anteriorly produced as a very broad but somewhat short frontal plate (Plate 1, fig. 1a), and with the postero-lateral rounded wings reaching to the end of the thorax or a little more backwards; the cervical groove very strong.

Eyes small, light reddish. Antennular peduncles (figs. 1a–1b) short and extremely thick; inner flagellum thin, about as long as the peduncle.— Antennal squama not jointed, with the outer margin serrate beyond the middle (fig. 1c).— Maxillulae (fig. 1e) without palp and without setae or spines on the inner lobe.— Maxillae (fig. 1f) somewhat reduced; the lobe from second (l^2) and third (l^3) joint distally rounded, undivided; the palp (p) very short, unjointed, and scarcely marked off; the exopod strongly developed, very broad.— Maxillipeds (fig. 1g) with the exopod about as long as the endopod, which distally is a little broader than in Lophogaster.

Gnathopods slightly shorter than the following pair of legs, shaped as in Lophogaster, with the seventh joint somewhat thick, a little curved, distally rounded, and strongly setose.— Legs somewhat slender, and the last pair (fig. 1i) considerably thinner than the first (fig. 1h) or second pair; claw long or very long, thin; exopod well developed in all pairs (the ovigerous female is unknown).

Sixth abdominal segment with two pairs of acute teeth from the lateral margin (fig. 1k), but the segment is not divided into two sections by any suture. Uropods with the endopod slightly overreaching the telson and a little longer than the exopod, which is not jointed towards the end (fig. 1l). Telson (fig. 1l) oblong-triangular, with the narrow end truncate, with lateral spines, and a couple of dorsal keels.

Remarks.— This genus is perhaps more allied and similar to Lophogaster M. Sars than to any other genus of the suborder; from the genus named it is, however, easily distinguished by the shape of the frontal plate, the reduced eyes, the less developed maxillae, the long uropods, etc. As to the use of the name Chalaraspis I follow Sars (Challenger Rept., p. 51). Willemoës-Suhm left two figures of a species to which he had given the name *Chalaraspis alata.* The only specimen obtained by the "Challenger" had been lost, and therefore Sars described the genus and the species from the drawings made by Suhm. The drawings have been rendered as woodcuts by Sars; they were evidently somewhat imperfect or inaccurate in several particulars. The figures show the animal as having the carapace exceedingly large, covering the two anterior abdominal segments and the lateral part of third segment. Among the "Albatross" material I found specimens agreeing tolerably with Suhm's figures in all main features excepting the relative length of the carapace, but as specimens of allied genera, Gnathophausia and Eucopia, sometimes are contracted to such a degree that the carapace covers two segments of the abdomen, no stress can be laid on the apparently very long carapace shown by Suhm's drawings, as his specimen in all probability has been very much contracted. And Sars's diagnosis of the genus agrees, so far as it goes, in the main with the description founded on my specimens.

1. **Chalaraspis alata** Willemoës-Suhm, MS. G. O. Sars.

Plate 1, figs. 1a–1l.

1885. *Chalaraspis alata* G. O. Sars, Challenger Rept., **13**, p. 51. (Two text-figures).

Sta. 4665. Nov. 17, 1904. Lat. 11° 45′ S., long. 86° 5.2′ W. 300 fms. to surface. 1 very young specimen.

Sta. 4672. Nov. 21, 1904. Lat. 13° 11.6′ S., long. 78° 18.3′ W. Top of Tanner net, 400 fms. to surface. 2 immature specimens (bad).

Sta. 4675. Nov. 22, 1904. Lat. 12° 54′ S., long. 78° 33′ W. 300 fms. to surface. 1 immature specimen.

Sta. 4719. Jan. 14, 1905. Lat. 6° 29.8′ S., long. 101° 16.8′ W. 300 fms. to surface. 1 male.

Description.— General aspect somewhat similar to that of Lophogaster.— The frontal plate somewhat short but very broad, with the anterior transverse margin straight or even slightly emarginate and the lateral angles broadly rounded (figs. 1a–1b). The carapace has the cervical groove not only deep but very curiously shaped; seen from the side (fig. 1b) the groove seems to be formed by two transverse furrows which unite laterally, while the anterior furrow is again dorsally bifid; on the side the furrow is bent and is far from reaching the lower margin of the carapace. A little more than the anterior fourth of the lateral margin of the carapace is hollowed in a peculiar way, and somewhat above the whole lateral margin a furrow runs from near the front to the hind margin. Between the antero-lateral rounded angles of the frontal plate and the cervical groove a pair of feeble longitudinal keels are seen (fig. 1a), and the area between these keels is feebly concave; a branchial groove is feebly developed, and rarely the posterior third of the carapace has the middle line distinctly keeled. The postero-lateral part of the carapace at each side is somewhat produced backwards and rounded as in Eucopia.

The eyes (fig. 1b, o.) are small, a little compressed, seen from above (fig. 1a) oblique-ovate, light reddish.— The antennular peduncles short and extremely thick; second joint with an oblong, slender, moderately short process on the outer side; third joint with the front margin projecting in an oblong, very acute process above the insertion of the upper flagellum and a somewhat similar process more downwards on the inner side of the joint; the upper flagellum thin, with numerous joints and about as long as the peduncle; lower flagellum very strong.— Last joint of the antennal peduncle with a small process on the outer side just below the insertion of the squama; the squama itself is a thin plate reaching somewhat beyond the end of the antennular peduncle, it is somewhat more than twice as long as broad (fig. 1c) with the inner margin very convex and setose, the outer margin a little bent angularly near or a little beyond the middle and its proximal part glabrous, the distal part serrate with 9–12 acute saw-teeth somewhat different in size.

The five anterior abdominal segments somewhat thick, dorsally flatly convex, and some among them even with a small, a little excavated dorsal area; lateral plates of the anterior segments rounded, on fifth, and sometimes on fourth, segment the postero-lateral angle is produced in a tiny or small, acute tooth. Sixth segment about as long as the fifth, with two pairs of obliquely transverse, somewhat short and shallow furrows; the two pairs of lateral teeth very acute. The uropods (fig. 1l) with the endopods slightly overreaching the telson and a little longer than the exopod, which has the end truncate and three or four faint serrations along the outer margin. Telson (fig. 1l) very oblong-triangular, scarcely three times as long as broad, above with a pair of high, longitudinal, very feebly serrate keels a little from the lateral margins, and the area between these keels excavated longitudinally; the distal half of each lateral margin with 5 or 6 spines; the end of the telson truncate, but hairs or spines wanting — perhaps lost?— in the specimens.

Length of the largest specimen, a probably adult male, 35 mm.

Remarks.— I do not entertain the slightest doubt that the species described here is *C. alata*. And I think it very important that it has been possible to fill the gap in our knowledge of the only hitherto imperfectly studied genus of the small but highly interesting suborder Lophogastrida.

Distribution.— The "Challenger" specimen was taken in the South Pacific: "lat. 50° 1′ S., long. 123° 4′ E.; depth, 1800 fathoms." It is certainly a bathypelagic form.

GNATHOPHAUSIA Willemoës-Suhm (1875).

The material is scanty, consisting of seven specimens belonging to three well-known species.

2. **Gnathophausia ingens** (Dohrn).

1870. *Lophogaster ingens* Dohrn, Zeitschr. wiss. Zool., **20**, p. 610; taf. 31, figs. 12–14.
1885. *Gnathophausia ingens* G. O. Sars, Challenger Rept., **13**, p. 30, pl. 2.
—— *Gnathophausia calcarata* G. O. Sars, Challenger Rept., **13**, p. 35, pl. 4.
1891. *Gnathophausia bengalensis* Wood-Mason, Ann. Mag. Nat. Hist., ser. 6, **8**, p. 269.
1906. *Gnathophausia ingens* Ortmann, Proc. U. S. Nat. Mus., **31**, p. 28.
—— *Gnathophausia calcarata* Ortmann, Proc. U. S. Nat. Mus., **31**, p. 30, pl. 1, figs. 2a, 2b.

Sta. 3681. Aug. 27, 1899. Lat. 28° 23′ N., long. 126° 57′ W. 350 fms. to surface. 1 specimen.

Remarks.— The specimen, which measures about 68 mm., agrees well with Ortmann's description of *G. calcarata* G. O. S. Dr. A. Alcock kindly sent me Wood-Mason's type of *G. bengalensis* and I can confirm Ortmann's interpretation that it is identical with *G. calcarata.* Wood-Mason said that "the upper lateral keels are strongly roof-shaped," but Ortmann was unable to understand the meaning of this sentence; I suppose, however, that Wood-Mason intended to say that the keels in question protrude laterally as eaves above the vertical sides of the carapace, when this is seen from behind or in an optic transverse section.

Ortmann (l. c., p. 28–30 and p. 34) was of the opinion that *G. ingens* (Dohrn) G. O. Sars, is the full-grown female of *G. calcarata* (Will.-Suhm, MS.) G. O. S., and I am able to add three points corroborating his view. I examined Sars's "Challenger" specimens of *G. ingens* (Dohrn) in the British Museum and found that it possessed the two pairs of oblique keels on the upper surface of the carapace, these keels being even well developed and completely similar to those on the type of *G. calcarata*; Ortmann rightly supposed that these keels had been overlooked by Dohrn and Sars. Furthermore Sars's figure of the ventral epimeral plates of the sixth abdominal segment in *G. ingens* is incorrect; the slit between the two posterior lobes of the plate is longer and narrower in proportion to the breadth of the lobes than in his fig. 6 (Pl. II), and, what is of more importance, each lobe has its outer terminal angle produced into a somewhat short, pointed tip, while the inner terminal angle at the slit is acute but very slightly produced, thus situated somewhat in front of the outer tip and shaped about as in *G. calcarata*, but differing notably from Sars's fig. 6 of *G. ingens.* Finally Sars says in the diagnosis of *G. ingens*: "branchiostegal spines obsolete," but he overlooked that these spines had been broken off in his specimen. I think one is now justified in adopting Ortmann's supposition and may safely take the step to withdraw *G. calcarata*, considering it only as a synonym.

Distribution.— According to the literature this species is known from off the West coast of Africa, "Laos," from the Gulf of Mexico, the Bay of Bengal, the Arafura Sea, South of Mindanao, the Hawaiian Islands, and is common in the California region in the East Pacific.

3. **Gnathophausia gracilis** Willemoës-Suhm.

1875. *Gnathophausia gracilis* Willemoës-Suhm, Trans. Linn. Soc. London, ser. 2, **1**, p. 33, pl. 9, fig. 1.
1885. *Gnathophausia gracilis* G. O. Sars, Challenger Rept., **13**, p. 48, pl. 7, figs. 6–10.
1891. *Gnathophausia brevispinis* Wood-Mason & Alcock, Ann. Mag. Nat. Hist., ser. 6, **7**, p. 269.
1895. *Gnathophausia brevispinis* Faxon, Mem. Mus. Comp. Zoöl., **18**, p. 216, pl. J.
1906. *Gnathophausia gracilis* Ortmann, Proc. U. S. Nat. Mus., **31**, p. 39.

Sta. 4651. Nov. 11, 1904. Lat. 5° 47.1′ S., long. 82° 59.7′ W. 2222 fms., trawl. 1 specimen.
Sta. 4652. Nov. 11, 1904. Lat. 5° 44.7′ S., long. 82° 39.5′ W. 400 fms. to surface. 1 small specimen.
Sta. 4656. Nov. 13, 1904. Lat. 6° 54.6′ S., long. 83° 34.3′ W. 2222 fms., trawl. 1 specimen.
Sta. 4709. Dec. 30, 1904. Lat. 10° 15.2′ S., long. 95° 40.8′ W. 2035 fms., trawl. 1 specimen.
Sta. 4715. Jan. 2, 1905. Lat. 2° 40.4′ S., long. 90° 19.3′ W. On way up from 1743 fms. 1 specimen.

Remarks.— The largest specimen, a male from Sta. 4709, is 69 mm. long; a female with the marsupium well developed (from Sta. 4656) is 65 mm. long, and another female with marsupium (from Sta. 4715) is 62 mm. These three large specimens have on the gastric area an oblong, rather high, lamellar, subtriangular, dentate crest terminating in a spiniform process; besides they have the lateral plates of the five anterior abdominal segments expanded posteriorly; the expansion of the plates of first segment is small in the two females, moderately large in the male, and the expansions increase in all three specimens gradually and considerably in size from first to fourth segment, while those of the fifth segment are somewhat smaller. In the smallest specimen, measuring 25 mm., the anterior dorsal spine on first abdominal segment is extremely small, the lateral plates of the abdominal segments are not expanded posteriorly, and the lamellar crest on the gastric area is rudimentary with a small spine above; in the fifth specimen, which is 37 mm. long, the last-named lamellar crest is developed nearly as in the large specimens, but the lateral plates of the second to the fifth abdominal segments are very feebly expanded.

I have examined the type-specimen of Willemoës-Suhm and G. O. Sars; it measures 41 mm. and is preserved in the British Museum. It has on the gastric region a small, oblong, triangular, lamellar plate with a spine on the vertex and a little farther behind there are four small saw-like teeth in a longitudinal row; furthermore the lateral plates of the abdominal segments are feebly expanded nearly as in the above mentioned specimen measuring 37 mm. Dr. Alcock loaned me the type of *G. brevispinis*, and an examination gave the result that it is identical with *G. gracilis* Will.-Suhm, as already pointed out by Ortmann.

Ortmann's elaborate account of this characteristic species is very good; my own examination of the types corroborates his statements and critical remarks. The study of the five specimens from the Agassiz collection and the two types mentioned shows that the lamellar crest is well developed both in full-grown and a little more than half-grown specimens, but rudimentary in a much smaller specimen, while the expansion of the lateral plates of the five abdominal segments is well developed only in full-grown specimens and feebly developed in specimens measuring 37–41 mm. in length. It may be added that the anterior dorsal spiniform process on first abdominal segment is always much smaller than the posterior, but proportionately considerably longer in large than in small specimens. The character pointed out by Ortmann that "there are two triangular, pointed epimeral lappets on each side of the anterior part of the sixth segment" is very interesting.

Distribution.— According to the literature this species has a wide distribution:— Atlantic at Lat. 1° 22′ N., long. 26° 36′ W., Bay of Bengal, off Galapagos, off Panama, and off Central California. It is a bathypelagic species, taken in depths from more than 600 to more than 2000 fathoms to surface, the only exception being the small, not half grown specimen from Sta. 4652 taken in 400 fathoms to surface.

4. **Gnathophausia zoëa** Willemoës-Suhm.

1875. *Gnathophausia zoëa* Willemoës-Suhm, Trans. Linn. Soc. London, ser. 2, **1**, p. 32, pl. 9, figs. 2–15; pl. 10, fig. 4.
1885. *Gnathophausia zoëa* G. O. Sars, Challenger Rept., **13**, p. 44, pl. 6, figs. 6–10.
—— *Gnathophausia willemoesii* G. O. Sars, Challenger Rept., **13**, p. 38, pl. 5, figs. 1–6.
1891. *Gnathophausia sarsi* Wood-Mason and Alcock, Ann. Mag. Nat. Hist., ser. 6, **7**, p. 187.
1906. *Gnathophausia zoëa* Ortmann, Proc. U. S. Nat. Mus., **21**, p. 42.
1908. *Gnathophausia zoëa* H. J. Hansen, The Danish Ingolf-Exp., **3**, 2, p. 93, pl. 4, figs. 3a–3c.
1910. *Gnathophausia zoëa* H. J. Hansen, Siboga-Exp., **37**, p. 17.

Sta. 4641. Nov. 7, 1904. Lat. 1° 34.4′ S., long. 89° 30.2′ W. 633 fms., trawl. 1 specimen.

Remarks.— As to variation, size, etc., of this species I refer to Ortmann's paper and to the remarks in my two recent treatises. The specimen from the Agassiz Expedition is about half grown and shows nothing of interest.

Distribution.— This species is common in the tropical and northern temperate Atlantic, where it is found northwards even to West of Iceland: Lat. 64° 45′ N., long. 29° 06′ W. (Ingolf-Exp.); it has been taken in the Bay of Bengal, in the Indian Archipelago, and is widely distributed in the tropical and northern temperate Pacific. Detailed statements on the geographical and bathymetrical occurrence are found in Ortmann's paper and in my two recent reports.

EUCOPIA Dana (1852).

The genus comprises four species, three of which are represented in this collection. In the account of the "Siboga" Schizopoda I have given an analytical key to the species and have dealt with the synonymy.

5. **Eucopia unguiculata** (Willemoës-Suhm).

1875. *Chalaraspis unguiculata* Willemoës-Suhm, Trans. Linn. Soc. London, ser. 2, **1**, p. 37–40, pl. 8 (partim).
1905. *Eucopia unguiculata* H. J. Hansen, Bull. Mus. Océan. Monaco, no. 42, p. 3.
1910. *Eucopia unguiculata* H. J. Hansen, Siboga-Exp., **37**, p. 20, pl. I, fig. 3a.

In this list I do not include Sars's account of his *Eucopia australis* Dana in the "Challenger" Rept., p. 55, pls. 9–10, because he, as pointed out in the "Siboga" paper, has confused three species, viz. *E. australis* Dana with figs. 1–2 on his pl. 9, *E. sculpticauda* Faxon, to which his figures 13–17 on pl. 10 belong, and *E. unguiculata* Will.-Suhm, to which at least the majority of his other figures belong.

Sta. 4646. Nov. 8, 1904. Lat. 4° 1.6′ S., long. 89° 16.3′ W. 300 fms. to surface. 1 specimen.
Sta. 4650. Nov. 10, 1904. Lat. 5° 22′ S., long. 84° 39′ W. 300 fms. to surface. 1 specimen.
Sta. 4652. Nov. 11, 1904. Lat. 5° 44.7′ S., long. 82° 39.5′ W. 400 fms. to surface. 1 specimen.
Sta. 4655. Nov. 12, 1904. Lat. 5° 57.5′ S., long. 80° 50′ W. 400 fms. to surface. 1 specimen.
Sta. 4664. Nov. 17, 1904. Lat. 11° 30.3′ S., long. 87° 19′ W. 300 fms. to surface. 1 specimen.
Sta. 4667. Nov. 18, 1904. Lat. 11° 59.5′ S., long. 83° 40.4′ W. 300 fms. to surface. 5 specimens.
Sta. 4668. Nov. 19, 1904. Lat. 12° 9.3′ S., long. 81° 45.2′ W. Bottom of Tanner net, 300 fms. 1 specimen.
Sta. 4669. Nov. 19, 1904. Lat. 12° 12.7′ S., long. 80° 25.6′ W. 300 fms. to surface. 6 specimens.
Sta. 4671. Nov. 20, 1904. Lat. 12° 6.9′ S., long. 78° 28.2′ W. 300 fms. to surface. 8 specimens.
Sta. 4672. Nov. 21, 1904. Lat. 13° 11.6′ S., long. 78° 18.3′ W. 400 fms. to surface, Tanner net, closed bottom. 1 specimen.
Sta. 4676. Dec. 5, 1904. Lat. 14° 28.9′ S., long. 81° 24′ W. 300 fms. to surface. 3 specimens.
Sta. 4679. Dec. 7, 1904. Lat. 17° 26.4′ S., long. 86° 46.5′ W. 300 fms. to surface. 1 specimen.
Sta. 4716. Jan. 2, 1905. Lat. 2° 18.5′ S., long. 90° 2.6′ W. 600 fms. to surface. 1 specimen.

Remarks.— The largest specimen, an adult male from Sta. 4676, measures 33 mm. in length, and is thus uncommonly large; the largest female with marsupium, from Sta. 4655, is 32 mm. long.

Distribution.— The species is common in the Western Mediterranean and the northern temperate Atlantic and extends far northwards, as it has been taken in the Davis Straits at Lat. 61° 50′ N. and West of Iceland at Lat. 64° 38′ N., long. 32° 37′ W. (Ingolf-Exp.). It is known from some localities in the Indian Archipelago; as shown above, it is not uncommon in a good portion South of Lat. 4° S. of the area explored in 1904–1905, and it is probably widely distributed in the tropical and temperate Pacific; Ortmann (1906) records a specimen from

North Coronado Island, California. Its distribution southward in the three large Oceans is still unknown. The majority of the localities enumerated in the literature by the authors until July 1905 for *E. australis* Dana certainly belong to *E. unguiculata*, but some among them to *E. major* or *E. australis*, and all specimens referred before July 1895 to *E. australis* should be reëxamined. The real *E. australis* Dana is a very large Antarctic species. The species has, as far as I know, never been taken near the surface.

6. **Eucopia major** H. J. Hansen.

1910. *Eucopia major* H. J. Hansen, Siboga-Exp., **37**, p. 21, pl. 1, figs. 4a–4b.

Sta. 4645. Nov. 8, 1904. Lat. 3 °37.6′ S., long. 89° 43.1′ W. 1955 fms., trawl. 1 specimen (only a fragment).
Sta. 4651. Nov. 11, 1904. Lat. 5° 41.7′ S., long. 82° 59.7′ W. 2222 fms., trawl. 2 specimens.
Sta. 4742. Feb. 15, 1905. Lat. 0° 3.4′ N., long. 117° 15.8′ W. 2320 fms., trawl. 1 specimen.

Remarks.— This species was established on a badly preserved female with marsupium secured by the "Siboga" and measuring 42 mm. in length. The specimens from the Pacific are also badly preserved; a male, from Sta. 4651, is 58 mm. long, and a female, from Sta. 4742, with the marsupial plates perhaps not fully developed is even about 60.5 mm. But I am inclined to think that these specimens had been a little shorter in the living state than in their present bad and seemingly extended condition.

The species is easily separated from *E. unguiculata* by its much larger size, the largest specimen recorded of the last-named species was only 38 mm., and especially by having its short eyes looking forwards, occupying less than one fourth of the outer margin of the whole appendage (stalk + cornea), while in *E. unguiculata* the cornea looks in the main outwards and occupies more than one third, frequently about two fifths, of the same outer margin. *E. major* is readily distinguished from *E. australis* Dana by having the terminal joint of the exopod of the uropods distinctly broader than long, while in *E. australis* it is longer than broad; besides the eye-stalks are proportionately longer and narrower in *E. australis* than in *E. major*.

Distribution.— A single specimen was captured in the Indian Archipelago by the "Siboga," and in 1910 some specimens were secured by the Prince of Monaco in the Atlantic West of Southern Spain. In 1906 Ortmann enumerated six localities in the North Pacific northwards to Lat. 56° 12′ N. and one locality in the West Indies for *E. australis*, but as *E. australis* Dana is an Antarctic species his determinations cannot be correct. As he had separated *E. unguiculata* from his *E. australis* I think that the specimens from his seven localities belong either all to *E. major* or some to *E. major* and others either to a hitherto undescribed species or that they are young specimens of *E. sculpticauda* Faxon.

7. **Eucopia sculpticauda** Faxon.

1893. *Eucopia sculpticauda* Faxon, Bull. Mus. Comp. Zoöl., **24**, p. 218.
1895. *Eucopia sculpticauda* Faxon, Mem. Mus. Comp. Zoöl., **18**, p. 219, pl. K, figs. 2, 2d; pl. 53, figs. 1–1d.
1905. *Eucopia intermedia* H. J. Hansen, Bull. Mus. Océan. Monaco, no. 30, p. 5, figs. 2–3. (Young).
1905. *Eucopia sculpticauda* H. J. Hansen, Bull. Mus. Océan. Monaco, no. 30, p. 6–7; fig. 4.

Sta. 4645. Nov. 8, 1904. Lat. 3° 37.6′ S., long. 89° 43.1′ W. 1955 fms., trawl. 1 adult female.
Sta. 4648. Nov. 9, 1904. Lat. 4° 43′ S., long. 87° 7.5′ W. 300 fms. to surface. 1 young specimen.
Sta. 4652. Nov. 11, 1904. Lat. 5° 44.7′ S., long. 82° 39.5′ W. 400 fms. to surface. 4 specimens (1 female with marsupium, 3 young specimens).
Sta. 4657. Nov. 13, 1904. Lat. 7° 12.5′ S., long. 84° 9′ W. 300 fms. to surface. 2 young specimens.
Sta. 4664. Nov. 17, 1904. Lat. 11° 30.3′ S., long. 87° 19′ W. 300 fms. to surface. 2 young specimens.
Sta. 4667. Nov. 18, 1904. Lat. 11° 59.5′ S., long. 83° 40.4′ W. 300 fms. to surface. 1 young specimen.
Sta. 4676. Dec. 5, 1904. Lat. 14° 28.9′ S., long. 81° 24′ W. 300 fms. to surface. 1 young specimen.
Sta. 4715. Jan. 2, 1905. Lat. 2° 20.4′ S., long. 90° 19.3′ W. 300 fms. to surface. 1 young specimen.
Sta. 4721. Jan. 15, 1905. Lat. 8° 7.5′ S., long. 104° 10.5′ W. 2084 fms., trawl. 2 adult females.
Sta. 4724. Jan. 17, 1905. Lat. 11° 13.4′ S., long. 109° 39′ W. 1841 fms., trawl. 1 adult female.

Remarks.— As already mentioned in the "Siboga" paper *E. intermedia* is only the young, differing from large or adult specimens in having the telson scarcely or not at all constricted a little before the tip and without any network of ridges on a portion of its surface, furthermore by having the first pair of thoracic legs somewhat less thick than in the adult, but yet much thicker than in the three other species of the genus.

As seen in the list, five females with marsupium have been captured. The smallest female (from Sta. 4652) is only 30 mm. long, the largest (from Sta. 4724) is 49 mm., the three other respectively 31.6 mm., 34.5 mm. and 36.5 mm. Faxon has mentioned a female measuring 66 mm. in length.

Distribution.— Faxon established *E. sculpticauda* on some specimens from the tropical Pacific (the Galapagos, the Gulf of Panama, off Central America); Ortmann (1905) enumerated two specimens from the Hawaiian Islands. It has been taken by the "Investigator" in the Bay of Bengal, by the Prince of Monaco in various places within the triangular area between Gibraltar, the Azores, and the Canary Islands; finally West of the Hebrides and Southwest of Iceland at Lat. 62° 25′ N., long. 28° 30′ W. (Ingolf-Exp.).

It is interesting that all the specimens captured by the "Albatross" at the six Stations in depths from 300 fms. to surface are not full grown, while one adult female is from 400 fms. to surface and the four other adult females from much greater depths to surface. This seems to confirm my observations as to *Gnathophausia zoëa* Will.-Suhm, *Sergestes arcticus* Kr., and *Sergestes robustus* Smith, "that small specimens are often at least found nearer the surface than the larger and that the wholly developed specimens are always only met with in deeper layers."

B. Suborder **MYSIDA.**

BOREOMYSIS G. O. Sars (1869).

8. **Boreomysis media,** sp. nov.

Plate 1, figs. 2a–2b.

Sta. 4652. Nov. 11, 1904. Lat. 5° 44.7′ S., long. 82° 39.5′ W. 400 fms. to surface. 1 adult female (Type).
Sta. 4655. Nov. 12, 1904. Lat. 5° 57.5′ S., long. 80° 50′ W. 400 fms. to surface. 1 adult female.
Sta. 4675. Nov. 22, 1904. Lat. 12° 54′ S., long. 78° 33′ W. 300 fms. to surface. 1 adult female.

Description.— Frontal plate very considerably produced (fig. 2a), with the transition between the front margin and the oblique lateral margin considerably curved; the front margin is produced in a conspicuous, triangular, acute rostrum. Eyes of very moderate size, brownish, somewhat depressed, scarcely as broad as the end of the stalk, which is a little broader than long and with a triangular process of moderate size on the upper surface. The antennal squama somewhat short, only three times as long as broad, with the outer margin nearly straight, the inner considerably convex and the end scarcely more than half as broad as the squama a little behind the middle; the terminal margin somewhat oblique and the outer tooth very distinct.

Exopod of uropods (fig. 2b) eight times as long as broad, with a couple of spines placed a little beyond the end of the proximal sixth of the outer margin. Telson scarcely three times as long as broad, because its proximal third is very broad; from the end of that third the telson tapers strongly to the beginning of the distal fourth, where it is narrow, only two fifths as broad as at the base; its terminal fourth widens feebly to the end; the incision, which occupies one fifth or one sixth of the whole length, has no angles on its margins and its proximal part is shaped as a triangle with its two sides a little convex. Each lateral margin from the end of the proximal third to near the distal end is furnished with about 10–11 moderately small spines and 18–20 very small spines, the latter regularly arranged between the former and generally two small spines in each interval (fig. 2b, a); along the distal part of the margin the spines are more equal in size, small.

Length of a female with marsupium (from Sta. 4652) 19.5 mm.

Remarks.— This species is allied to *B. sibogae* H. J. H., but differs especially in having the antennal squama conspicuously broader with the end oblique and the inner margin more convex; furthermore, the telson is distally much narrower and the incision conspicuously shorter than in *B. sibogae*.

9. **Boreomysis fragilis,** sp. nov.

Plate 1, fig. 3a; Plate 2, fig. 1a.

Sta. 4650. Nov. 10, 1904. Lat. 5° 22′ S., long. 84° 39′ W. 300 fms. to surface. 3 specimens.
Sta. 4652. Nov. 11, 1904. Lat. 5° 44.7′ S., long. 82′ 39.5′ W. 400 fms. to surface. 1 specimen.
Sta. 4655. Nov. 12, 1904. Lat. 5° 57.5′ S., long. 80° 50′ W. 400 fms. to surface. 1 adult female.
Sta. 4671. Nov. 20, 1904. Lat. 12° 6.9′ S., long. 78° 28.2′ W. 300 fms. to surface. 1 specimen.
Sta. 4676. Dec. 5, 1004. Lat. 14° 28.9′ S., long. 81° 24′ W. 300 fms. to surface. 1 specimen.
Sta. 4679. Dec. 7, 1904. Lat. 17° 26.4′ S., long. 86° 46.5′ W. 300 fms. to surface. 2 adult specimens, male (Type) and female.

Description.— Frontal plate considerably produced, subtriangular (fig. 3a), with the lateral margins very feebly convex and a little concave in front at the rostral process, which is triangular, acute, and bent a little upwards. Eyes very small, reddish brown, looking forwards and especially downwards, only a narrow strip being visible from above; the eye-stalks increase somewhat in breadth from the base outwards and are somewhat longer, measured from the middle of the terminal margin, than broad; at the upper inner angle produced into an oblong-triangular process reaching considerably beyond the cornea.

The antennal squama is somewhat less than four times as long as broad, broadest somewhat before the middle and there almost twice as broad as at the end; the outer margin is feebly concave, the terminal margin oblique, and the outer tooth very distinct.

Exopod of the uropods (fig. 1a) seven times as long as broad, with a couple of fine spines on the outer margin at the end of its naked basal fifth. Telson proportionately broad, scarcely more than three times as long as broad, but at the beginning of its terminal fourth only about two fifths as broad at a little from the base; the terminal incision, which occupies about one fifth of the total length, has its proximal portion triangular and a little acuminate, while the major part of the lateral margins of the incision are more or less distinctly diverging. The lateral margins of the telson are furnished with a moderately small number of spines; seven or eight at each side are somewhat small but yet considerably or much longer than the others which are very or extremely small.

In the adult male the exopod of third pair of pleopods is about half as long again, the exopod of second pair about one third as long again, as the endopod.

Length of the male 12 mm., of a female with marsupium 13 mm.

Remarks.— This small species is allied to *B. microps* G. O. Sars, but differs especially in having the process at the end of the eye-stalks very much larger and the longer lateral spines on the telson much shorter than in the last-named species. The integuments are thin; not a single specimen is really well preserved, and the majority a good deal mutilated and somewhat shrivelled; most of them are besides immature or small.

It may be mentioned that a small, oblong ganglion is found at the base of the process on the eye-stalks; this ganglion is connected with the large optic ganglion by a couplĕ of nerve fibres, and from it a fibre runs towards the end of the process, which probably may have some sensory function.

SIRIELLA Dana (1850).

Of this very large genus four species are at hand, three of which were taken in 1904–1905, and a fourth in 1900.

10. Siriella thompsonii (H. Milne Edwards).

1837. *Cynthia thompsonii* H. Milne Edwards, Hist. Nat. Crust., **2**, p. 462.
1852. ?*Siriella vitrea* Dana, U. S. Expl. Exp. Crust., **1**, p. 656, pl. 43, figs. 6a–6m.
—— ?*Siriella brevipes* Dana, U. S. Expl. Exp. Crust., **1**, p. 658, pl. 44, figs. 1a–1q.
1861. *Cynthia inermis* Kröyer, Nat. Tidsskr., 3, R. **1**, p. 44, tab. 2, fig. 6, a–g.
1868. *Siriella edwardsii* Claus, Zeitschr. wiss. Zool., **17**, p. 271, taf. 18.
1882. *Siriellides indica* Czerniavsky, Mon. Mysid., **1**, p. 103, tab. 31, figs. 1–6.
1885. *Siriella thompsoni* G. O. Sars, Challenger Rept., **13**, p. 205, pl. 36, figs. 1–24.
1910. *Siriella thompsonii* H. J. Hansen, Siboga-Exp., **37**, p. 31 (with further notes on synonymy).

Sta. 4571. Oct. 7, 1904. Lat. 33° 40′ N., long. 119° 35′ W. 4 fms., surface net. 2 specimens.
Sta. 4576. Oct. 8, 1904. Lat. 29° 52′ N., long. 116° 56′ W. Surface. 1 specimen.
Sta. 4611. Oct. 18, 1904. Lat. 10° 33′ N., long. 88° 30′ W. Surface. More than 30 specimens.
Sta. 4615. Oct. 19, 1904. Lat. 9° 7′ N., long. 85° 11′ W. Surface. 2 specimens.
Sta. 4617. Oct. 20, 1904. Lat. 7° 45′ N., long. 82° 25′ W. Surface. 1 specimen.
Sta. 4619. Oct. 20, 1904. Lat. 7° 15′ N., long. 82° 8′ W. Surface. 2 specimens.
Sta. 4635. Nov. 4, 1904. Lat. 3° 52.5′ N., long. 84° 14.3′ W. Surface. 3 specimens.
Sta. 4640. Nov. 6, 1904. Lat. 0° 39.4′ S., long. 88° 11′ W. Surface. 1 specimen.
Sta. 4646. Nov. 8, 1904. Lat. 4° 1.6′ S., long. 89° 16.3′ W. Surface. 1 specimen.
Sta. 4648. Nov. 9, 1904. Lat. 4° 43′ S., long. 87° 7.5′ W. Surface. 1 specimen.
Sta. 4667. Nov. 18, 1904. Lat. 11° 59.5′ S., long. 83° 40.4′ W. Surface. 1 specimen.
Sta. 4671. Nov. 20, 1904. Lat. 12° 6.9′ S., long. 78° 28.2′ W. Surface. 3 specimens.
Sta. 4677. Dec. 5, 1904. Lat. 14° 37.5′ S., long. 81° 41′ W. Surface. 1 specimen.
Sta. 4678. Dec. 6, 1904. Lat. 16° 31.2′ S., long. 85° 3.8′ W. Surface. 1 specimen.
Sta. 4680. Dec. 7, 1904. Lat. 17° 55′ S., long. 87° 42′ W. Surface. 13 specimens.
Sta. 4682. Dec. 8, 1904. Lat. 19° 7.6′ S., long. 90° 10.6′ W. Surface. 2 specimens.
Sta. 4683. Dec. 9, 1904. Lat. 20° 2.4′ S., long. 91° 52.5′ W. 300 fms. to surface. 1 specimen.
Sta. 4685. Dec. 10, 1904. Lat. 21° 36.2′ S., long. 94° 56′ W. 300 fms. to surface. 2 specimens.
Sta. 4686. Dec. 10, 1904. Lat. 22° 2.2′ S., long. 95° 52′ W. Surface. 2 specimens.
Sta. 4688. Dec. 11, 1904. Lat. 23° 17.2′ S., long. 98° 37.5′ W. Surface. 3 specimens.
Sta. 4692. Dec. 13, 1904. Lat. 25° 40.4′ S., long. 104° 1.3′ W. Surface. 1 specimen.
Sta. 4694. Dec. 22, 1904. Lat. 26° 34′ S., long. 108° 57.3′ W. Surface. 4 specimens.

Sta. 4695. Dec. 23, 1904. Lat. 25° 22.4′ S., long. 107° 45′ W. 300 fms. to surface. 2 specimens.
Sta. 4696. Dec. 23, 1904. Lat. 24° 40.3′ S., long. 107° 5.3′ W. Surface. 7 specimens.
Sta. 4698. Dec. 24, 1904. Lat. 22° 50.4′ S., long. 105° 31.7′ W. Surface. 1 specimen.
Sta. 4700. Dec. 25, 1904. Lat. 20° 28.8′ S., long. 103° 26.3′ W. Surface. 5 specimens.
Sta. 4702. Dec. 26, 1904. Lat. 18° 39.5′ S., long. 102° W. Surface. 1 specimen.
Sta. 4704. Dec. 27, 1904. Lat. 16° 55.3′ S., long. 100° 24.6′ W. Surface. 1 specimen.
Sta. 4706. Dec. 28, 1904. Lat. 14° 18.7′ S., long. 98° 45.8′ W. Surface. 1 specimen.
Sta. 4709. Dec. 30, 1904. Lat. 10° 15.2′ S., long. 95° 40.8′ W. 300 fms. to surface. 1 specimen.
Sta. 4710. Dec. 30, 1904. Lat. 9° 30.5′ S., long. 95° 8.3′ W. Surface. 1 specimen.
Sta. 4712. Dec. 31, 1904. Lat. 7° 5′ S., long. 93° 35.5′ W. Surface. 11 specimens.
Sta. 4718. Jan. 13, 1905. Lat. 5° 32.4′ S., long. 90° 32.2′ W. Surface. 1 specimen.
Sta. 4720. Jan. 14, 1905. Lat. 7° 13.3′ S., long. 102° 31.5′ W. Surface. 1 specimen.
Sta. 4723. Jan. 16, 1905. Lat. 10° 14.3′ S., long. 107° 45.5′ W. Surface. 14 specimens.
Sta. 4725. Jan. 17, 1905. Lat. 11° 38.3′ S., long. 110° 5′ W. Surface. 7 specimens.
Sta. 4727. Jan. 18, 1905. Lat. 13° 03′ S., long. 112° 44.9′ W. Surface. 12 specimens.
Sta. 4729. Jan. 19, 1905. Lat. 14° 15′ S., long. 115° 13′ W. Surface. 6 specimens.
Sta. 4741. Feb. 11, 1905. Lat. 8° 29.7′ S., long. 122° 56′ W. Surface. 1 specimen.

Remarks.— Adult specimens of both sexes vary extremely in length. The smallest female with marsupium (from Sta. 4702) is 4.4 mm. long, another female (from Sta. 4696) scarcely 4.5 mm., while the largest female (from Sta. 4680) is 9.6 mm. from the end of the frontal plate to the tip of the telson. One of the smallest males (from Sta. 4678) is 6.6 mm., and the largest male (from Sta. 4677) is 9.8 mm. The number of spines on the distal part of the outer margin of first joint of the exopod of the uropods varies from 3 to 6.

Three females from Sta. 4727, two from Sta. 4680, and one female from Sta. 4611 and from Sta. 4671, have an Epicarid, probably *Dajus siriellae* G. O. Sars, in the marsupium.

Distribution.— According to the literature and the collections seen by me this species is widely distributed in the tropical and warmer temperate areas of the Atlantic, the Indian Ocean, and the Pacific; the Copenhagen Museum possesses specimens from about fifty places in these Oceans. In the Atlantic it has been taken northwards to Lat. 42° N., long. 44° W., southwards to Lat. 40° 32′ S., long. 52° 2′ W., in the Indian Ocean southwards to Lat. 40° 4′ S., long. 53° 25′ E. (specimens from these three localities in the Copenhagen Museum); in the Pacific it was taken at Lat. 33° 40′ N. in 1904, and southwards it is known from a point between Sidney and Wellington (G. O. Sars). It has generally been captured at the surface; I am even inclined to think that the specimens from the three Stations named above from "300 fms. to surface" were taken near the surface.

11. **Siriella gracilis** Dana.

1852. *Siriella gracilis* Dana, U. S. Expl. Exp. Crust., **1**, p. 658, pl. 44, figs. 1a–1g.
1885. *Siriella gracilis* G. O. Sars, Challenger Rept., **13**, p. 209, pl. 36, figs. 25–28.
1910. *Siriella gracilis* H. J. Hansen, Siboga-Exp., **37**, p. 31.

Sta. 4592. Oct. 13, 1904. Lat. 18° 20′ N., long. 103° 40′ W. Surface. 2 specimens.
Sta. 4607. Oct. 17, 1904. Lat. 12° 00′ N., long. 91° 30′ W. Surface. 1 specimen.
Sta. 4611. Oct. 18, 1904. Lat. 10° 33′ N., long. 88° 30′ W. Surface. 10 specimens.
Sta. 4619. Oct. 20, 1904. Lat. 7° 15′ N., long. 82° 8′ W. Surface. 5 specimens.
Sta. 4640. Nov. 6, 1904. Lat. 0° 39.4′ S., long. 88° 11′ W. Surface. 1 specimen.
Sta. 4712. Dec. 31, 1904. Lat. 7° 5′ S., long. 93° 35.5′ W. Surface. 3 specimens.
Sta. 4716. Jan. 2, 1905. Lat. 2° 18.5′ S., long. 90° 2.6′ W. Surface. 2 specimens.
Sta. 4720. Jan. 14, 1905. Lat. 7° 13.3′ S., long. 102° 31.5′ W. Surface. 11 specimens.
Sta. 4723. Jan. 16, 1905. Lat. 10° 14.3′ S., long. 107° 45.5′ S. Surface. About 30 specimens.
Sta. 4725. Jan. 17, 1905. Lat. 11° 38.3′ S., long. 110° 5′ W. Surface. 8 specimens.
Sta. 4729. Jan. 19, 1905. Lat. 14° 15′ S., long. 115° 13′ W. Surface. 1 specimen.
Sta. 4733. Jan. 21, 1905. Lat. 16° 57.4′ S., long. 120° 48′ W. Surface. 1 specimen.

Besides this species was taken by the "Albatross" in 1899 at a single place:— Hyd. Sta. 3789. Sept. 9, 1899. Lat. 2° 38′ N., long. 137° 22′ W. Surface. 3 specimens. "Albatross."

Distribution.— This slender and small species, which has only been taken at the surface, is known from the Bay of Bengal (the author), is common in the Indian Archipelago ("Siboga"), and from here it is, according to the literature, distributed across the Pacific in its tropical area; Sars has mentioned it from the North Pacific. It has never been taken in the Atlantic.

12. **Siriella media** H. J. Hansen.

1910. *Siriella media* H. J. Hansen, Siboga-Exp., **37**, p. 38, pl. 4, figs. 3a–3k.

Butaritari, Gilbert Islands, Jan. 6, 1900. Lagoon. Surface. Light. 9 specimens (1 adult male, 8 immature specimens). "Albatross."

Remarks.— The presence of an adult male rendered it possible to determine the species. The strong setae of both rami of fourth pair of pleopods agree in every main point and even in most of minute particulars with my drawings (figs. 3e and 3f) in the paper quoted. The proximal joint of each exopod of the uropods with only 13 spines. The male is 9.5 mm. long.

Distribution.— *S. media* was hitherto known only from seven places in the Indian Archipelago ("Siboga").

13. **Siriella aequiremis** H. J. Hansen.

1910. *Siriella aequiremis* H. J. Hansen, Siboga-Exp., **37**, p. 40, pl. 3, figs. 4a–4c; pl. 4, figs. 1a–1l.

Sta. 4592. Oct. 13, 1904. Lat. 18° 20′ N., long. 103° 40′ W. Surface. 1 specimen.
Sta. 4619. Oct. 20, 1904. Lat. 7° 15′ N., long. 82° 8′ W. Surface. 7 specimens.
Hyd. Sta. 3789. Sept. 19, 1899. Lat. 2° 38′ N., long. 137° 22′ W. Surface. 1 adult female.

Remarks.— A couple of specimens are adult males, and the largest is 10.4 mm. The sexual setae on the endopod of fourth pleopods nearly as on fig. 1h in the "Siboga" paper, but the longest inner seta slightly overreaches the terminal, consequently intermediate between fig. 1h and fig. 1f.

Distribution.— *S. aequiremis* was established on specimens from the Indian Archipelago, where it was taken at ten places; furthermore it is known from the Arabian Sea, the Bay of Bengal, the Indian Ocean Lat at. 3° 9′ N., long. 84° 44′ E., and the China Sea (the author).

HEMISIRIELLA H. J. Hansen (1910).

14. **Hemisiriella abbreviata,** sp. nov.

Plate 2, figs. 2a–2c.

Butaritari, Gilbert Islands. Jan. 6, 1900. Lagoon. Surface. Light. 1 female with young. "Albatross."

Description.— Slender.— Carapace extremely short, leaving along the middle line nearly more than three segments uncovered; the frontal plate (fig. 2a) somewhat feebly produced, constituting a low triangle with the vertex acute. Eyes moderately large, very light brownish; the stalks somewhat broader than long and broader than the retina. The antennulae with the third peduncular joint distinctly less than twice as long as broad. The antennal squama short, about two and a half times as long as broad, with the terminal lobe beyond the base of the marginal tooth twice as broad as long.

Uropods (fig. 2b) with the endopod not overreaching the exopod, with five marginal spines occupying only about one fifth of the outer margin of the proximal joint of the exopod, and the distal joint somewhat less than twice as long as broad. Telson (figs. 2b and 2c) proportionately short, not reaching the articulation of the exopod, distinctly less than twice as long as broad, with two pairs of spines at the end of the broad proximal part, while its longer distal part is linguiform, with the proximal third of its lateral margins conspicuously concave and the end broadly rounded; the lateral margins of a little less than the distal half of the telson only with 4–5 spines irregular as to size and intervals, while the terminal margin has three extremely small spines in the interval between three pairs of long spines, the inner pair of which are slightly shorter than the most lateral pair, while the intermediate pair are considerably longer than the others; terminal feathered setae not observed.

Length of the single adult female 5.5 mm.

Remarks.— This species is allied to *H. pulchra* H. J. H., but is smaller with the eyes larger, the third joint of the antennular peduncle shorter in proportion to breadth, and the telson broader with a small number of lateral spines and three pairs of long terminal spines. Though the elongate endopod of the first pair of legs is lost I refer this species to Hemisiriella, because the preserved second joint of these legs is thicker than that of second pair, because the carapace is extremely short, etc.

ANCHIALINA Norman (1906).

No specimen of this very characteristic genus was taken by Dr. Agassiz in 1904–1905, but three species were secured by the "Albatross" in 1900 at Butaritari, Gilbert Islands, and one of these species is new to science. The genus has been revised in my "Siboga" paper.

15. **Anchialina typica** (Kröyer).

1861. *Anchialus typicus* Kröyer, Nat. Tidsskr., 3 R., **1**, p. 53, tab. 2, fig. 7, a–l.
1910. *Anchialina typica* H. J. Hansen, Siboga-Exp., **37**, p. 52, pl. 7, figs. 2a–2k.

Butaritari, Gilbert Islands. Jan. 6, 1900. Lagoon. Surface. Light. 7 specimens. "Albatross."

Remarks.— The specimens are all adult males. They are somewhat small, measuring about 5.5 mm. in length, but they agree closely with smaller "Siboga" specimens in all particulars. The exopod of the third pair of pleopods has not four but only three long, slender processes, each with a terminal seta; these processes are found on the fifth, sixth, and seventh joint counted from the distal end, while in the "Siboga" specimen figured (fig. 2i) such processes are found on the fifth to the eighth joint; in small "Siboga" specimens such processes are wanting on the eighth joint or even on the seventh and the eighth joints, as already stated in my paper.

Distribution.— *A. typica* has a very wide distribution, and it may be sufficient to give an abstract of the statements in the "Siboga" paper. The species is known from tropical Atlantic (Kröyer), the West Indies, the Gulf of Siam, several places in the Indian Archipelago, and probably the Hawaiian Islands.

16. **Anchialina grossa** H. J. Hansen.

1910. *Anchialina grossa* H. J. Hansen, Siboga-Exp., **37**, p. 54, pl. 7, figs. 3a–3n; pl. 8, figs. 1a–1d.

Butaritari, Gilbert Islands. Jan. 6, 1900. Lagoon. Surface. Light. 1 specimen. "Albatross."

Remarks.— The specimen is an immature female. In the shape of the frontal plate with rostrum, the size of the eyes and the shape of the exopod of the uropods it agrees perfectly with females of *A. grossa* from the Indian Archipelago.

Distribution.— *A. grossa* was taken at several places in the Indian Archipelago, and besides it is known from the Gulf of Siam and the Bay of Bengal (the author).

17. **Anchialina obtusifrons**, sp. nov.

Plate 2, figs. 4a–4c.

Butaritari, Gilbert Islands. Jan. 6, 1900. Lagoon. Surface. Light. 2 adult males. "Albatross."

Description.— This species is in most particulars closely allied and similar to *A. grossa.* Frontal plate in the male (fig. 4a) less broad than in *A. grossa* and produced in a long rostrum reaching slightly beyond the eyes; this rostrum has the lateral margins a little concave, these being proximally somewhat converging forward and distally parallel, while the end of the rostrum looks nearly truncate, but its terminal, obtusely triangular portion is in reality bent downwards and backwards below the apparently terminal part. The eyes are brown and slightly larger than in *A. grossa*, broader than the end of the stalk which widens considerably from the base outwards.

Third joint of the antennular peduncle less thick and conspicuously longer than in *A. grossa*, being half as long again as broad. Antennal squama about as in *A. grossa.*

Gnathopods (fig. 4b) nearly as in *A. grossa*; second joint very large and much longer than broad; fifth joint strongly expanded, and from the inner side with a very large, lamellar, oblong-triangular, distally blunt process directed inwards and much forwards; sixth joint broad. First pair of thoracic legs as the following pair, with sixth joint divided into three subjoints.

Exopod of third male pleopods (fig. 4c) in the main as in *A. grossa*, with the distal joints much altered and furnished with several processes which constitute a most complex organ, though different in several minor particulars from that in *A. grossa.* The gigantic lamellar process (a.) on the posterior outer side is much narrowed somewhat before the end and its most distal part is also a little widened; the joint (b.) bearing the terminal processes is much longer than in *A. grossa*, with a terminal, lamellar expansion covering in front the insertion of these processes (c., d., and e.); finally, the inner process (e.) has more than its distal half very slender, the ramification of the median process (d.) is somewhat different from that in *A. grossa*, and the very long outer process (c.) has its secondary branch ($c.^1$) adorned with a few low saw-like teeth.

Uropods with the endopod reaching about the end of the telson and somewhat longer than the exopod, which has the end broadly rounded, nearly truncate, and 15–17 spines along the outer margin.— Telson nearly as in *A. grossa*, but the proximal part of the terminal incision is narrower.

Length 7.5 mm.

Remarks.— As already stated, this species is on the whole allied and similar to *A. grossa*, but the male is easily distinguished by the quite different shape of the rostrum, by having the third antennular joint conspicuously longer in proportion to its breadth, and by the above-mentioned differences in the sexual organ terminating the exopod of third pair of pleopods.

GASTROSACCUS Norman (1869).

The "Albatross" secured several specimens in 1900, but none were found among the material of 1904–1905.

18. Gastrosaccus pacificus, sp. nov.

Plate 2, figs. 3a–3g.

Butaritari, Gilbert Islands. Jan. 6, 1900. Lagoon. Surface. Light. 8 specimens (3 (1 Type) adult males, 5 females with marsupium, 1 immature female). "Albatross."

Description.— Frontal plate, eyes, antennulae, and antennal squama (fig. 3a) nearly as in *G. indicus* H. J. H. (1910).— Male pleopods in the main as in *G. indicus*, but differing in some particulars. First pair (fig. 3b) with the endopod very slender, not one third as long as the exopod, which has the distal third divided into four joints. Second pair (fig. 3c) only a little more than half as long again as the first; the peduncle with second joint almost four times as long as broad; the endopod more than half as long as the exopod, with the distal major part of the proximal half considerably expanded on the outer side and the expansion distally terminating in a sharp, somewhat acute angle, while the distal part of the endopod is slender with a single articulation; the exopod is about as in *G. indicus*. Third pair (fig. 3d) with the endopod not distinguishable; the exopod is extremely elongate, but its distal portion is lost in all the specimens; the most proximal part of the exopod is strongly thickened, twice as long as broad and on the outer side distally produced into a rather short triangular process directed strongly outwards; somewhat beyond that thickened part three small spines are found. Fourth (fig. 3e) and fifth (fig. 3f) pairs nearly as in *G. indicus*; both rami unjointed, the exopod considerably more slender and on fourth pair slightly, on fifth pair considerably, longer than the endopod.

Uropods (fig. 3g) nearly as in *G. indicus*; the exopod with 11 or 12 marginal spines, most of them long, longer than in *G. indicus*. Telson nearly two and a half times as long as broad, with 10–12 spines along each margin, the terminal spine included; the penultimate pair of spines considerably longer than the terminal pair, twice as long as the antepenultimate pair and nearly as long as the breadth of the telson at their insertion.

Length of both sexes 6.4 mm.

Remarks.— This species is a little smaller than *G. indicus,* but so closely allied that it might be considered a variety if it did not show the very marked difference in the third pair of male pleopods; the rather short, triangular process turning essentially outwards from the thick basal part twice as long as broad seems to be an excellent specific character, as this part differs very much in aspect from the corresponding portion in *G. indicus,* in which the thickened part is much shorter and the process much longer and directed much backwards or parallel with the exopod (Siboga-Exp., Pl. 8, figs. 2k and 2l); unfortunately the distal part of that exopod is wanting. The peduncles of the three anterior pairs of pleopods are more slender than in *G. indicus.*

All five adult females have a parasitic Isopod in the marsupium, probably a species of Prodajus, and allied to *P. ostendensis* Gilson which inhabits the marsupium of the European *Gastrosaccus spinifer* Goës.

EUCHAETOMERA G. O. Sars (1883).

To this genus Brutomysis Chun and Mastigophthalmus Illig ought to be referred. That Brutomysis must disappear is certain, as its single species, *B. vogtii* Chun, is without doubt a synonym to *E. typica* G. O. S. And Mastigophthalmus does not show any difference from Euchaetomera of real generic value, as the appendix at the eye-stalks is rather developed in *E. typica,* and the spinulation, length of flagella, etc., are only specific characters.

Three species, all captured in 1904–1905, are represented in the collection, and one among them is new.

19. Euchaetomera typica G. O. Sars.

Plate 2, figs. 5a–5e.

1883. *Euchaetomera typica* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, no. 7, p. 42.
1885. *Euchaetomera typica* G. O. Sars, Challenger Rept., **13**, p. 211, pl. 37, figs. 1–20.
1896. *Brutomysis Vogtii* Chun, Bibl. Zool., **7**, heft. 19, p. 179, taf. 15.
1906. ?*Euchaetomera limbata* Illig, Zool. Anz., **30**, p. 203, fig. 10, A–D.

Sta. 4734. Jan. 22, 1905. Lat. 17° 36′ S., long. 122° 35.6′ W. 300 fms. to surface. 2 specimens.

As the two specimens, a female with marsupium and an immature female (together with a third specimen from the Atlantic) differ considerably in a number of features from the description and figures published by Sars, I asked my friend the excellent carcinologist Dr. W. T. Calman to examine the type preserved in the British Museum. I sent him tracings of my figures published in this paper of my specimen, together with a number of questions on particular features. Dr. Calman answered that the type "agrees better with your description and figures than with those of Sars in all the points you mention," and he added some notes and sketches which agree well with the features observed in my specimens. Therefore I will now give the following additions to the description of Sars.

The front margin of the carapace (fig. 5a) is furnished with spiniform processes or denticles, those on the most lateral fourth of each half of the margin are long and slender, and from here they decrease very much in size, being quite minute along a part of the margin towards the proportionately narrow and very short frontal plate which is produced into a rather slender and somewhat long, acute rostrum. The posterior margin of the carapace has a number of small or very small denticles, while the posterior margin of its lateral wings and the lateral margins are unarmed.

The eyes (fig. 5b) show peculiar features. The postero-lateral area of ocelli is, seen from above, a little more than half as long again as broad; there is no interval between the anterior and the postero-lateral area; the most posterior row of facets of the anterior area is of normal aspect, while each facet in the four following transverse rows of the anterior area is produced into a somewhat small, acute denticle; all other facets on the upper surface of the eye are simple, rounded. From the inner margin of the eye-stalks a little before the ocelli a very oblong, weak process or appendix projects forwards; in the adult female it is about as long as the part with spine-bearing ocelli on the opposite lateral margin.— The antennal squama (fig. 5c) is three times or a little more as long as broad, with the outer margin scarcely concave, the terminal lobe slightly broader than long and the outer distal process as long as, or a little shorter than, the terminal lobe and bent slightly outwards.— The thoracic legs (fig. 5d) on the outer side with a good number of moderately long setae; the distal half or one third of each of these setae is quite naked, while the remainder is very closely plumose; along the inner side of the legs the setae are less numerous, but several among them are very long, and all are naked or with extremely short hairs along the distal side.

First to third abdominal segment without denticles along the margins; fourth segment with very small denticles along the posterior and the lateral margin, fifth and sixth segments with spiniform denticles along the same margins; most of these denticles are rather large though some small ones are interspersed.— The uropods (fig. 5e) have both rami much slenderer than shown in Sars's fig. 19 (which in this respect differs materially from his fig. 1).— Telson (fig. 5e) considerably broader than long, in the adult female with 6–7 spines along each lateral margin, while in the immature specimen only 4 and 6 spines were observed.

Length of the adult female 9 mm.

Remarks.— It will be seen that the additions and corrections to Sars's description and figures are rather numerous. I think that *Brutomysis vogtii* Chun, taken at Madeira, is the young male of the same species. The author states that the five anterior abdominal segments have a lateral armature, viz. 4 spiniform denticles at the postero-lateral angle of each segment, while the sixth segment has spines along the whole posterior margin. It is far from improbable that the lateral armature of the anterior abdominal segments is found only in the males, and if this supposition be correct, I think that the other differences between the specimens studied and Chun's description and figures are due to imperfections in the latter.— *E. limbata* Illig is possibly another species, because its squama, according to Illig's figure, has a shape somewhat different from that in *E. typica* and the carapace is, at least in the male, spiniferous around the whole margin.

Distribution.— Sars enumerated three localities in the Northern Pacific between Lat. 35° 22′ and 37° 52′ N., long. 169° 53′ E. and 160° 17′ W.; his specimens were from the surface of the sea. Ortmann recorded it from off Galera Point in the tropical East Pacific and from the Sargasso Sea and the Southern equatorial current in the Atlantic. Dr. J. Schmidt captured a single specimen West of Gibraltar at Lat. 36° 13′ N., long. 9° 44′ W.— Chun's *Brutomysis vogtii* was captured at Madeira, and Illig's *E. limbata* at two Stations in the Atlantic.

20. **Euchaetomera tenuis** G. O. Sars.

1883. *Euchaetomera tenuis* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, no. 7, p. 42.
1885. *Euchaetomera tenuis* G. O. Sars, Challenger Rept., **13**, p. 214, pl. 37, figs. 21–24.
1905. *Euchaetomera fowleri* Holt & Tattersall, Fisheries Ireland. Sci. Invest., 1902–3, (1905), p. 123 and 144; pl. 24, figs. 1–3.
1910. *Euchaetomera tenuis* H. J. Hansen, Siboga-Exp., **37**, p. 66, pl. 10, fig. 3a.

Sta. 4717. Jan. 13, 1905. Lat. 5° 10′ S., long. 98° 56′ W. 300 fms. to surface. 1 immature female.
Sta. 4719. Jan. 14, 1905. Lat. 6° 29.8′ S., long. 101° 16.8′ W. 300 fms. to surface. 1 adult female.
Sta. 4721. Jan. 15, 1905. Lat. 8° 7.5′ S., long. 104° 10.5′ W. 300 fms. to surface. 1 male.
Sta. 4722. Jan. 16, 1905. Lat. 9° 31′ S., long. 106° 30.5′ W. 300 fms. to surface. 1 adult female.

Remarks.— Illig states (Zool. Anz., **30**, 1906, p. 202) that the endopod of first pair of thoracic legs is wanting in *E. fowleri* and in his two new species of Euchaetomera, among which is the above-named *E. limbata*. As to *E. tenuis* Sars = *E. fowleri* Holt and Tatt. his statement is incorrect; the endopod is well developed both in the maxillipeds, the gnathopods, and in all six pairs of real legs; I am inclined to think that the same is the case in his two other species.

Distribution.— Sars's type was captured in the South Pacific off the coast of Chile. The "Siboga" secured it at two places in the Indian Archipelago. According to several authors (Ortmann, Tattersall, Holt and Tattersall, and myself) the species is widely distributed in the tropical and northern temperate Atlantic, in its eastern part going northwards to West of Ireland; and it has been taken in the Western Mediterranean also.

21. **Euchaetomera plebeja**, sp. nov.

Plate 3, figs. 1a–1b.

Sta. 4583. Oct. 11, 1904. Lat. 22° 45′ N., long. 110° 5′ W. 300 fms. to surface. 1 immature specimen.

Sta. 4676. Dec. 5, 1904. Lat. 14° 28.9′ S., long. 81° 24′ W. 300 fms. to surface. 1 male, (Type), perhaps not quite adult.

Description.— Allied to *E. tenuis* G. O. S. and *E. oculata* H. J. H.— The frontal plate (fig. 1a) shaped as a low, broad triangle with the two sides a little concave and the vertex moderately broadly rounded.— The eyes about as thick as in *E. tenuis*, but the posterior area with acting facets is much larger, being longer than broad and the distance between the anterior and the posterior area at the outer margin distinctly less than half as long as the outer margin of the posterior area, while in *E. tenuis* that distance is about as long as the whole outer margin of the posterior area which is shorter than broad.— The antennal squama is five times as long as broad, with the outer margin almost or quite straight, no external tooth and the terminal lobe beyond the most proximal outer seta a little longer than broad.— The rami of the uropods (fig. 1b) broader in proportion to length than in *E. tenuis*.— Telson somewhat broader than long, otherwise as in *E. tenuis*.

Length of the male 5 mm., but the specimen is perhaps not quite full grown.

Remarks.— *E. plebeja* is instantly separated from *E. tenuis* by the much longer posterior dark area of the eyes and by the at least nearly straight outer margin of the antennal squama. *E. oculata* differs from *E. plebeja* by having a very conspicuous, somewhat narrow frontal plate, by considerably thicker eyes and by having the antennal squama only three and a half times as long as broad.

CRYPTOMYSIS, gen. nov.

Description (based on the female).— Body somewhat slender.— Carapace produced into a moderately large, triangular frontal plate (Plate 3, fig. 2a) and posteriorly not covering the entire cephalothorax.

Eyes very large, with short stalks. Antennal squama (fig. 2b) somewhat elongate, lanceolate, narrow, with a transverse suture and setose along both margins.— Labrum obtuse in front, without process.— Left mandible (figs. 2c–2e) has the incisive part well developed, a moderately strong, movable lobe, a couple of thick, digitate setae and the molar process somewhat long and thick; the palp is proportionately slender, its second joint (fig. 2e) somewhat curved, with its inner margin adorned with a row of regularly arranged, spiniform processes, each of which has a seta at the middle of its front margin; third joint of the palp rather short.— Maxillulae (fig. 2f) with the outer joint somewhat slender and a little angular at the middle of its exterior margin.— Maxillae (fig. 2g) somewhat elongate and narrow, with the exopod small and very narrow and the terminal joint not expanded distally and more than twice as long as broad.— Maxillipeds (fig. 2h) with first and second joints very long and moderately slender, first joint terminating in a free, minute lobe and second joint with a small lobe; third, fourth, and fifth joints each not longer than broad and without appreciable lobes; terminal joint small, triangular; claw well developed.

Gnathopods (fig. 2i) with second joint long and thick, without any real lobe; third and fourth joints somewhat small, transverse; fifth and sixth joints rather long, very slender and the fifth nearly naked; the claw somewhat long and strong.— The thoracic legs wanting excepting some exopods and a single endopod; the latter (fig. 2k) is slender, with fourth joint a little shorter than the fifth and a little longer than the sixth, which is divided by a transverse articulation near its end; only a few rather long setae on the endopod.

Uropods (fig. 2l) slender, with both rami setose along both margins as in the subfamily Mysinae; the otocyst well developed.— Telson (figs. 2l and 2m) quite aberrant; it is somewhat short, tapering considerably from the broad base to a little beyond the proximal two thirds of its length and then widening again, the terminal part being much broader than long, with the terminal margin nearly straight at the middle and broadly rounded at the sides; the whole margin of the terminal transverse part of the telson and the distal part of the lateral margins in front of that terminal part furnished with thick spines.

Remarks.— This new genus belongs to the subfamily Mysinae and is easily distinguished from all other genera by the shape of the telson. The male being unknown, I am unable to decide with any certainty whether the genus ought to be referred to the tribe Leptomysini or to the real Mysini. The shape of the antennal squama, of the maxillae and their palp, and the absence of lobes on the third and fourth joints of the maxillipeds seem to indicate relationship to the Leptomysini, while the shape of the telson resembles feebly that in *Anisomysis laticauda* H. J. H., which belongs to the tribe Mysini. The armature of the second joint of the mandibular palps bears a superficial similarity to the structure found in *Lycomysis spinicauda* H. J. H.

22. **Cryptomysis lamellicauda,** sp. nov.

Plate 3, figs. 2a–2m.

Fiji Islands. Off Vatu. Dec. 9, 1897. Plankton, 30 fms. 1 adult female. A. Agassiz.

Description.— Frontal plate (fig. 2a) about twice as broad as long, with the end very acute and distinctly acuminate.— Eyes very large, black.— Antennal squama (fig. 2b) between seven and eight times as long as broad, tapering from the middle, with the narrow end transverse and with the suture from the insertion of the penultimate lateral inner seta to the corresponding incision on the outer margin; the terminal joint not fully twice as long as broad.— Second joint of the mandibular palp (fig. 2e) with about thirteen teeth along the inner margin, those near the middle much longer than the most proximal or the most distal.

Sixth abdominal segment considerably longer than the fifth.— The rami of the uropods slender; the exopod almost seven times as long as broad, and considerably longer than the endopod.— Telson scarcely half as long as the endopod of the uropods, not fully half as long again as broad; the proximal part about as long as broad, with four somewhat strong spines towards the end of each margin; the distal portion a little more than half as broad again as long, with twenty spines, the lateral ones smaller and regularly tapering to the acute end, while the spines along the transverse and nearly straight posterior margin are longer, stronger, and taper only from beyond the middle to the acute end.

Length of the single specimen, a female with marsupium, 5.8 mm.

Remarks.— The specimen is dark coloured, but being far from well preserved and somewhat shrivelled in front it is not impossible that the dark colour may be due to the state of preservation.

DOXOMYSIS, gen. nov.

Description (based on a mutilated adult female).— Body moderately slender.— Carapace anteriorly produced into a rather short, triangular, frontal plate terminating in a rostrum, posteriorly not covering the entire cephalothorax.

Eyes large, with short stalks.— Antennal squama (Plate 3, fig. 3a) scarcely elongate, setose along both margins and with the end very obtuse.— Labrum obtuse in front, without process.— Left mandible (figs. 3b and 3c) with the incisive part, movable lobe, setae, and molar process well developed; the palp about as in the genera allied to Mysis.— The maxillae (fig. 3d) shaped nearly as in Michtheimysis Norm., with the terminal joint of the palp very large, much expanded and broader than long, but the exopod with only a few short setae. Maxillipeds (fig. 3e) with second joint long and terminating in a broad, well-developed, setose lobe; third and fourth joints very broad with broad, setose lobes; fifth and sixth joints broad; seventh joint triangular with its claw shaped as a thick seta.

(Gnathopods wanting).— The endopod of a single thoracic leg was preserved; it is very slender, its fifth joint somewhat longer than the fourth and a little shorter than the sixth; sixth joint divided into three subjoints by two transverse articulations, the first a little before, the second a little beyond the middle.

Uropods slender, both rami-shaped and setose as in the Mysini; the endopod below near the inner margin with a number of spiniform processes directed inwards and downwards.— Telson (figs. 3f and 3g) about half as long as the uropods, distally deeply cleft with minute spines along the margins of the triangular incision; the terminal lobes have the end broad and furnished with some spines.

Remarks.— The shape of the maxillipeds and of the terminal joint of the maxillae seems to prove that the genus belongs to the tribe Mysini, while the telson differs somewhat from that in genera hitherto known.

23. **Doxomysis pelagica**, sp. nov.

Plate 3, figs. 3a–3g.

Sta. 4640. Nov. 6, 1904. Lat. 0° 39.4′ S., long. 88° 11′ W. Surface. 1 mutilated adult female.

Description.— Frontal plate a little more than twice as broad as long, terminating in a slender rostrum unfortunately broken off at some distance from its origin.— Eyes large, but in very damaged condition.— Antennal squama (fig. 3a) between five and six times as long as broad, with the outer margin a little concave and the inner convex, somewhat tapering from near the base to the broad, almost transverse end; the terminal joint somewhat longer than broad.

The abdominal segments furnished above and on the sides with a very large number of quite minute, mostly very slender denticles.— The exopod of the uropods nearly eleven times as long as broad.— Telson (figs. 3f and 3g) slightly more than half as long as the exopod of the uropods, almost twice as long as broad, with the outer margin somewhat concave; the terminal incision is deep, one third as deep as the length of the telson, oblong-triangular, somewhat rounded at the bottom and there with a couple of setae almost as long as the incision, while each of its lateral margins is furnished with 13–14 very small spines; slightly more than the distal half of each lateral margin of the telson is spiniferous, the proximal spines widely separated from each other, the more distal spines moderately close; the terminal lobes taper somewhat from the base of the incision to near the end, where they are feebly widened inwards; this end is broad and rounded, with four spines distinctly a little longer than the more distal lateral spines.

Remarks.— This species is easily distinguished by the shape and armature of the telson. The presence of a very large number of tiny denticles on the abdominal segments is interesting.

II. The Order **EUPHAUSIACEA.**

The collection contains representatives of eight genera. Only three genera hitherto known are wanting, viz. Meganyctiphanes Holt and Tatt., Thysanoëssa Kröyer (with Rhoda Sim or Boreophausia G. O. S.[1]), and Tessarabrachion H. J. H., but these are exclusively confined to the temperate and cold seas.

BENTHEUPHAUSIA G. O. Sars (1885).

Only a single species is known.

1. **Bentheuphausia amblyops** (G. O. Sars).

1883. *Thysanopoda (?) amblyops* G. O. Sars, Forh. Vid. Selsk. Christiania for 1883, no. 7, p. 23.
1885. *Bentheuphausia amblyops* G. O. Sars, Challenger Rept., **13**, p. 109, pl. 19; text-fig. 4.

[1] This topic has been dealt with in my paper on the genera and species of the order Euphausiacea (Bull. Mus. Océan. Monaco, no. 210, 1911).

Sta. 4676.	Dec. 5, 1904.	Lat. 14° 28.9′ S., long. 81° 24′ W.	300 fms. to surface.	1 specimen.
Sta. 4679.	Dec. 7, 1904.	Lat. 17° 26.4′ S., long. 86° 46.5′ W.	300 fms. to surface.	1 specimen.
Sta. 4681.	Dec. 8, 1904.	Lat. 18° 47.1′ S., long. 89° 26′ W.	300 fms. to surface.	2 specimens.
Sta. 4683.	Dec. 9, 1904.	Lat. 20° 2.4′ S., long. 91° 52.5′ W.	300 fms. to surface.	2 specimens.
Sta. 4707.	Dec. 29, 1904.	Lat. 12° 33.2′ S., long. 97° 42′ W.	300 fms. to surface.	1 specimen.
Sta. 4722.	Jan. 16, 1905.	Lat. 9° 31′ S., long. 106° 30.5′ W.	300 fms. to surface.	1 specimen.
Sta. 4740.	Feb. 11, 1905.	Lat. 9° 2.1′ S., long. 123° 20.1′ W.	300 fms. to surface.	3 specimens.

Distribution.— According to the literature this species is known from the Atlantic, where it extends northwards to Lat. 46° 15′ N. and southwards to a place off Tristan da Cunha; also from the Bay of Bengal, the Indian Archipelago, and South of Australia.

It is a true bathypelagic species and this explains perhaps that among the twelve specimens from seven Stations in the East Pacific only a single specimen (from Sta. 4707) seems to be really adult.

THYSANOPODA H. Milne Edwards (1830).

The material of this large and somewhat difficult genus is very rich, comprising nine species; a young specimen, which is very far from adult though not small, I have with some doubt referred to *T. cornuta* Illig, of which a much larger specimen is at hand. Only two valid species of this genus are not found in the collection, but both are known only from the North Atlantic.[1]

The maxillulae differ much from each other in various species, affording excellent specific characters, especially characters for quite small groups of species. In a couple of species the outer lamella from their first lobe, the "pseudexopod," is somewhat small, at most slightly overreaching the outer margin of third joint, while in most species the pseudexopod is of moderate size or very large, with its greater part reaching beyond the outer margin of third joint; furthermore the fourth joint, the palp, differs extremely as to length and breadth in various species. For these reasons I have given figures of the maxillulae of most species.— The maxillae of various species differ generally but little in shape, and therefore it has been deemed unnecessary to figure more than the maxilla of a single species.

Group a. *Carapace without any distinct cervical groove. Maxillulae with the pseudexopod from moderately large to very large, with at least almost their half situated beyond the outer margin of third joint, and with the palp at most moderately long and somewhat overreaching the third joint. Sixth abdominal segment longer than the fifth.*

[1] *Thysanopoda megalops* Illig as re-established by that author in July, 1911, on a specimen from the Indian Ocean is certainly a young and most probably the young of *T. egregia* H. J. H.

PLATE 1.

Fig. 1. **Chalaraspis alata** WILLEMOËS-SUHM.

Fig. 1a. Anterior part of the body of an adult male from Sta. 4719, from above; $\times \frac{16}{3}$.

Fig. 1b. Anterior part of the body of the same male, from the left side; $\times \frac{11}{2}$. o. eye.

Fig. 1c. Right antennal squama of an immature specimen from Sta. 4672, from above; $\times$ 13.

Fig. 1d. Left mandible of the same immature specimen, from below; $\times \frac{17}{2}$.

Fig. 1e. Left maxillula of the same immature specimen, from below; $\times \frac{17}{2}$. 1. first joint; l^1. lobe from first joint; 2. second joint; 3. third joint.

Fig. 1f. Left maxilla of the same immature specimen, from below; $\times$ 17. 1. first joint; l^2. lobe from second joint; l^3. lobe from third joint; p. palp.

Fig. 1g. Left maxilliped of the same immature specimen, from below; $\times$ 13. The epipod omitted.

Fig. 1h. First left thoracic leg (the appendage behind the gnathopods) of the same immature specimen, from behind; $\times \frac{17}{2}$.

Fig. 1i. Last (sixth) left thoracic leg of the same specimen, from behind; $\times \frac{17}{2}$.

Fig. 1k. Posterior half of abdomen, with the distal parts of the uropods and telson omitted, of the adult male from Sta. 4719, from the left side; $\times \frac{17}{3}$.

Fig. 1l. Fifth and sixth abdominal segments with telson and the right uropod of the same adult male, from above, $\times \frac{16}{3}$.

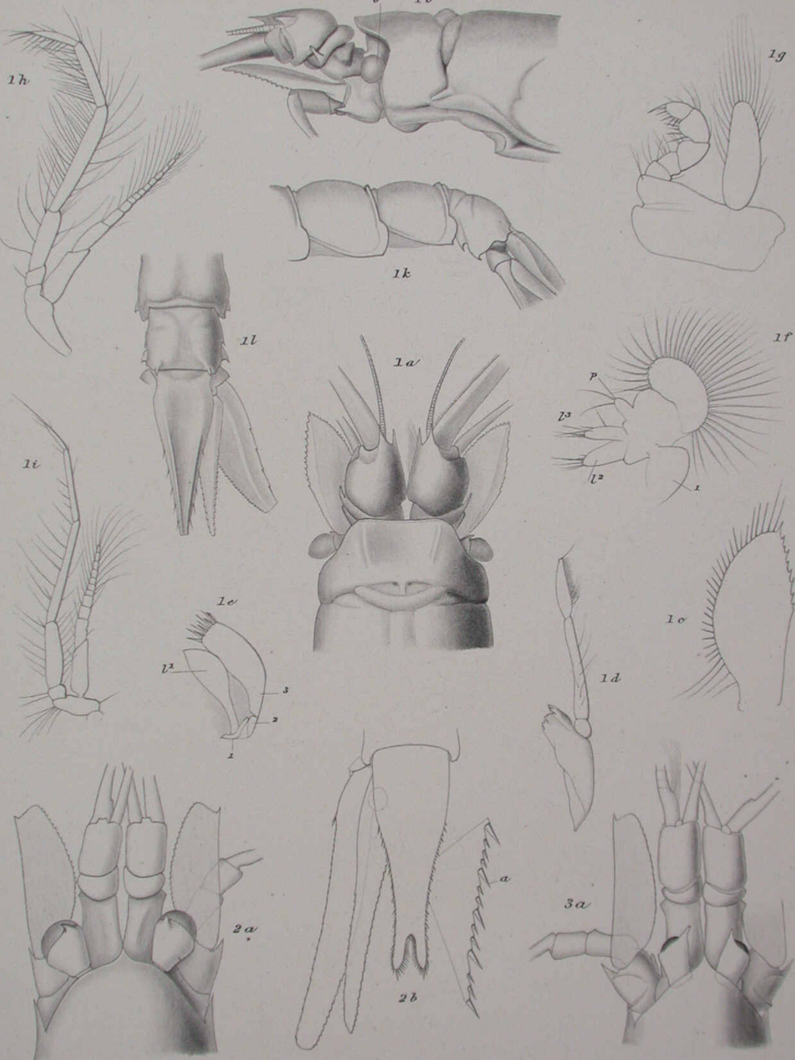
Fig. 2. **Boreomysis media,** sp. nov.

Fig. 2a. Anterior part of an adult female from Sta. 4652, from above; 12.

Fig. 2b. Telson and left uropod of the same specimen, from above; $\times$ 16. a. a portion of the right lateral margin of the telson more highly magnified, viz. $\times$ 64, in order to show the arrangement and relative size of the lateral spines.

Fig. 3. **Boreomysis fragilis,** sp. nov.

Fig. 3a. Anterior part of a male from Sta. 4679, from above; $\times$ 16.



1. *Chalaraspis alata* Will.-Suhm. 2. *Boreomysis media* n. sp. 3. *B. fragilis* n. sp.

T. N. Möller sc.

H. J. Hansen del.

PLATE 2.

Fig. 1. **Boreomysis fragilis,** sp. nov.

Fig. 1a. Telson and left uropod of the same male, from above; × 22.

Fig. 2. **Hemisiriella abbreviata,** sp. nov.

Fig. 2a. Anterior part of an adult female, from above; × 33.

Fig. 2b. Posterior part of sixth abdominal segment with left uropod and telson of the same female, from above; × 33.

Fig. 2c. Telson of the same specimen, from above; × 51.

Fig. 3. **Gastrosaccus pacificus,** sp. nov.

Fig. 3a. Anterior part of an adult female, from above, × 34.

Fig. 3b. First right pleopod of an adult male, from behind; × 45.

Fig. 3c. Second right pleopod of the same male, from behind; × 45.

Fig. 3d. Third right pleopod of the same male, from behind; × 45. The distal part of the exopod wanting.

Fig. 3e. Fourth right pleopod of the same male, from behind; × 45.

Fig. 3f. Fifth right pleopod of the same male, from behind; × 45.

Fig. 3g. Telson and right uropod of an adult female, from above; × 46.

Fig. 4. **Anchialina obtusifrons,** sp. nov.

Fig. 4a. Anterior part of an adult male, from above; × 20.

Fig. 4b. Left gnathopod of the same male, from behind; × 33.

Fig. 4c. Distal part of the exopod of third right male pleopod, from in front; × 186. a. the lamellar process; b. joint bearing the terminal processes; c. outer very long process, with its secondary branch c^1.; d. median ramified terminal process; e. inner terminal process.

Fig. 5. **Euchaetomera typica** G. O. Sars.

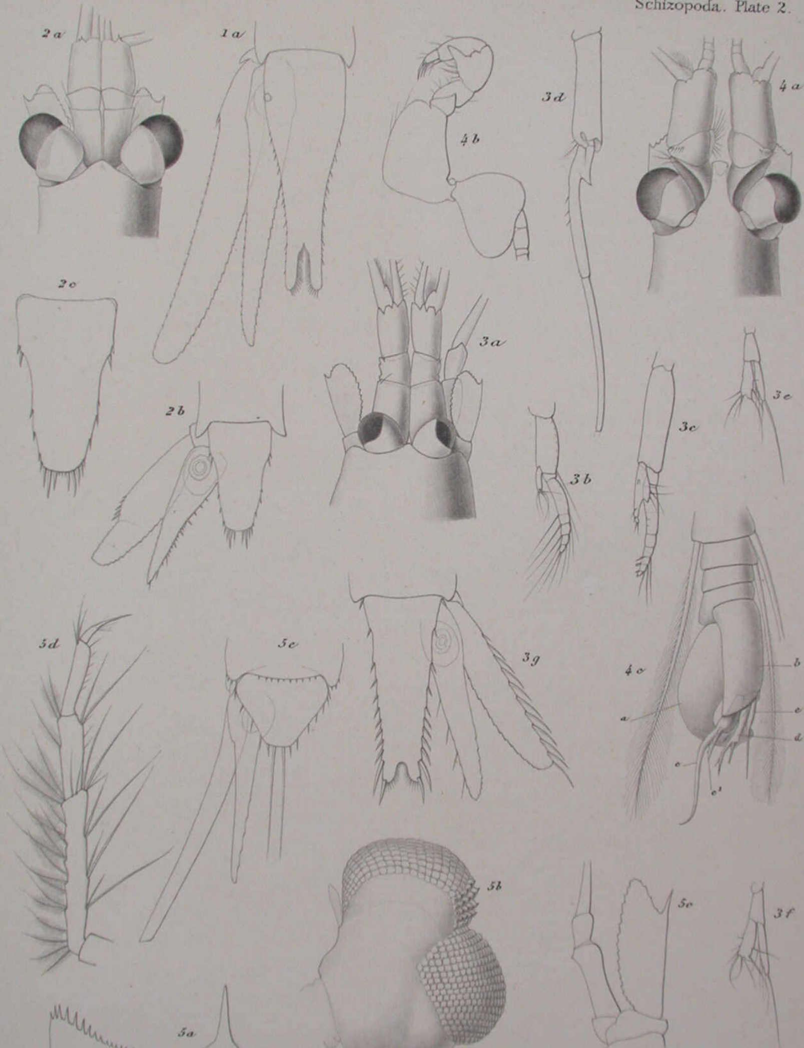
Fig. 5a. Median and left part of the anterior margin of the carapace of an ovigerous female, from above; × 48.

Fig. 5b. Right eye of the same female, from above; × 52.

Fig. 5c. Proximal part of right antenna with the squama of the same female, from above; × 23.

Fig. 5d. Distal part of fourth left leg of the same female, from in front; × 35.

Fig. 5e. End of sixth abdominal segment with telson and left uropod of the same female, from above; × 22.



1. *Boreomysis fragilis* n.sp. 2. *Hemisiriella abbreviata* n.sp. 3. *Gastrosaccus pacificus* n.sp.
4. *Anchialina obtusifrons* n.sp. 5. *Euchætomera typica* G.O.S.

H.J.Hansen del. T.N. Möller sc.

PLATE 3.

Fig. 1. **Euchaetomera plebeja,** sp. nov.

Fig. 1a. Anterior part of a male from Sta. 4676, from above; × 33.

Fig. 1b. End of sixth abdominal segment with telson and left uropod of the same specimen, from above; × 25.

Fig. 2. **Cryptomysis lamellicauda,** gen. et. sp. nov.

Fig. 2a. Anterior part of an adult female, from above; × 32. The specimen is somewhat shrivelled.

Fig. 2b. Left antenna of the same female, from above; × 40.

Fig. 2c. Left mandible of the same female, from below; × 47.

Fig. 2d. Distal part of the same mandible, from below; × 48.

Fig. 2e. Second joint of the palp of the same mandible, from below; × 78.

Fig. 2f. Left maxillula of the same female, from below; × 80.

Fig. 2g. Left maxilla of the same female, from below; × 80.

Fig. 2h. Left maxilliped of the same female, from below; × 45.

Fig. 2i. Left gnathopod of the same female, from below; × 45.

Fig. 2k. Major distal part of the endopod of a thoracic leg of the same specimen; × 45.

Fig. 2l. End of sixth abdominal segment with telson and left uropod of the same specimen, from above; × 32.

Fig. 2m. Telson shown in the preceding figure, from above; × 74.

Fig. 3. **Doxomysis pelagica,** gen. et. sp. nov.

Fig. 3a. Left antenna of the adult female, from below; × 40.

Fig. 3b. Left mandible of the same female, from below; × 56.

Fig. 3c. Distal part of the same mandible, from below; × 88.

Fig. 3d. Left maxilla of the same female, from below; × 90.

Fig. 3e. Left maxilliped of the same female, from below; × 88. Exopod and epipod omitted.

Fig. 3f. Telson of the same female, from above; × 47.

Fig. 3g. Distal part of telson, from above; × 80.

Fig. 4. **Thysanopoda cristata** G. O. Sars.

Fig. 4a. Carapace of an immature specimen from Sta. 4736, from the left side; × $\frac{15}{2}$. A denticle at the lateral margin omitted.

Fig. 4b. Front part of the carapace of an adult male, from above; × 5.

Fig. 4c. Front part of the carapace of the adult male, from the left side; × 8.

1. *Euchætomera plebeja* n. sp. 2. *Cryptomysis lamellicauda* n. gen., n. sp. 3. *Doxomysis pelagica* n. gen., n. sp.
4. *Thysanopoda cristata* G.O.S.

H. J. Hansen del. F. N. Møller sc.

PLATE 4.

Fig. 1. **Thysanopoda cristata** G. O. SARS.

Fig. 1a. Left antennular peduncle of the adult male, from the outer side; × 8.
Fig. 1b. Right antennular peduncle of the adult male, from above; × 8.
Fig. 1c. Left antennular peduncle of the young specimen from Sta. 4699, from the left side; × 14.
Fig. 1d. Left maxillula of the immature specimen from Sta. 4736, from below; × 31.
Fig. 1e. Male copulatory organ of left first pleopod, unrolled and seen from behind; × 25. li. inner lobe; lm. median lobe; ls. setiferous lobe — the setae along both margins omitted; lu. auxiliary lobe; p^1. spine-shaped process; p^2. terminal process; p^3. proximal process; p^4. lateral process.
Fig. 1f. Terminal process of the organ shown in fig. 1e, from behind; × 45.
Fig. 1g. Terminal process of the organ shown in fig. 1e, from the inner side; × 50.
Fig. 1h. Distal part of the median lobe of the organ shown in fig. 1e, seen from in front and exhibiting the lateral process and the additional process; × 45.

Fig. 2. **Thysanopoda tricuspidata** H. MILNE EDWARDS.

Fig. 2a. Left maxillula of an adult specimen, from below; × 32. 1. first joint; l^1. lobe from first joint; 2. second joint; 3. third joint; l^3. lobe from third joint; 4. fourth joint or palp; px. pseudexopod.

Fig. 3. **Thysanopoda monacantha** ORTMANN.

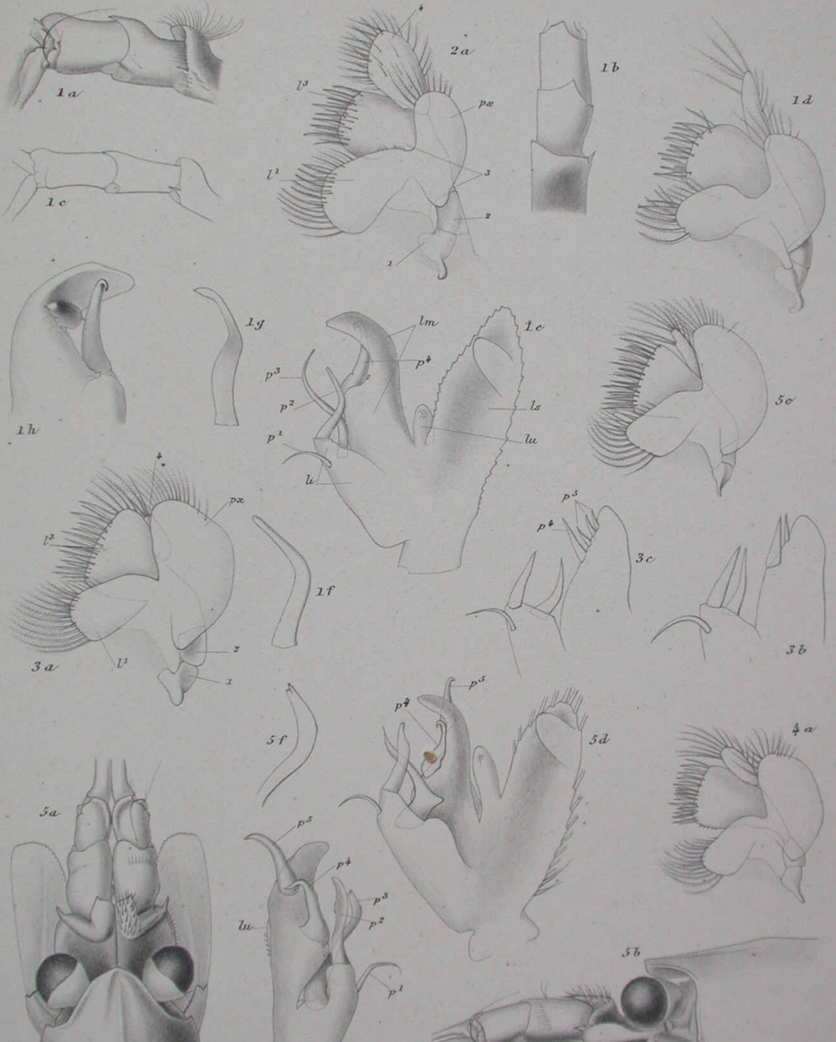
Fig. 3a. Left maxillula of a probably immature male, from below; × 34. The lettering as in fig. 2a.
Fig. 3b. Inner and median lobes of left copulatory organ of a probably immature male, from behind; × 85. The median lobe has the lateral process and only one additional process.
Fig. 3c. Inner and median lobes of left copulatory organ of another probably immature male, from behind; × 85. p^4. lateral process; p^5. three additional processes.

Fig. 4. **Thysanopoda aequalis** H. J. HANSEN.

Fig. 4a. Left maxillula of an adult female, from behind; × 35.

Fig. 5. **Thysanopoda obtusifrons** G. O. SARS.

Fig. 5a. Anterior part of the body of a female, from above; × 15. The setae on left antennula omitted.
Fig. 5b. Anterior part of a female, from the left side; × 14.
Fig. 5c. Left maxillula of an adult male, from below; × 30.
Fig. 5d. Left copulatory organ, unrolled and seen from behind; × 48. p^4. lateral process; p^5. additional process.
Fig. 5e. Inner and median lobes of left copulatory organ, from the inner side; × 60. p^1. spine-shaped process; p^2. terminal process; p^3. proximal process; p^4. lateral process; p^5. additional process; lu. margin of the auxiliary lobe with its minute coupling hooks.
Fig. 5f. Distal part of the proximal process of the organ shown in fig. 5e, from the inner side; × 130.



1. Thysanopoda cristata G.O.S. 2. T. tricuspidata M-Edw. 3. T. monacantha Ortm.
4. T. æqualis H.J.H. 5. T. obtusifrons G.O.S.

H.J. Hansen del. T.N. Möller sc.

PLATE 5.

Fig. 1. **Thysanopoda pectinata** ORTMANN.

Fig. 1a. Anterior part of a female from Sta. 4719, from above; × 13. The setae on right antennula omitted.

Fig. 1b. Anterior part of a female from Sta. 4705, from the left side; × 12.

Fig. 1c. Front end of the carapace of a male from Sta. 4705, from above; × 12.

Fig. 1d. Left maxillula of a male, from below; × 24. 4. fourth joint or palp, very small and seen through the large pseudexopod.

Fig. 1e. Left copulatory organ, unrolled and seen from behind; × 34. p^1. spine-shaped process; p^2. terminal process; p^3. proximal process; p^4. lateral process; p^5. additional process; p^6. secondary additional process.

Fig. 1f. Distal part of the inner and median lobes of left copulatory organ, seen from the inner side and showing all processes excepting the secondary additional process; × 48.

Fig. 1g. Distal part of the proximal process, seen from the outer side; × 50.

Fig. 1h. The additional process, seen from in front; × 90.

Fig. 1i. Inner lobe with its three processes of left copulatory organ of a small male from Sta. 4705, from behind; × 68.

Fig. 1k. Anterior part of a young specimen, 11 mm. long, from Sta. 4730, from above; × 23. Setae omitted.

Fig. 1l. Anterior part of the young specimen shown in the preceding figure and seen from the right; × 14.

Fig. 1m. Right antennula of the same young specimen, from the right side; × 25.

Fig. 2. **Thysanopoda orientalis** H. J. HANSEN.

Fig. 2a. Left maxillula of an adult male, from below; × 32. The palp is seen through the large pseudexopod.

Fig. 2b. Outline of left maxillula of another male, from below; × 20. The figure is given for comparison with fig. 2a in order to show difference in the palp.

Fig. 2c. Left maxilla of an adult male, from below; × 20. 1. first joint; 2. second joint; l^2. lobe from second joint; 3. third joint; l^3. lobe of third joint; ex. exopod.

Fig. 2d. Left copulatory organ, unrolled and seen from behind; × 33. p^4. lateral process; p^5. additional process; p^6. secondary additional process.

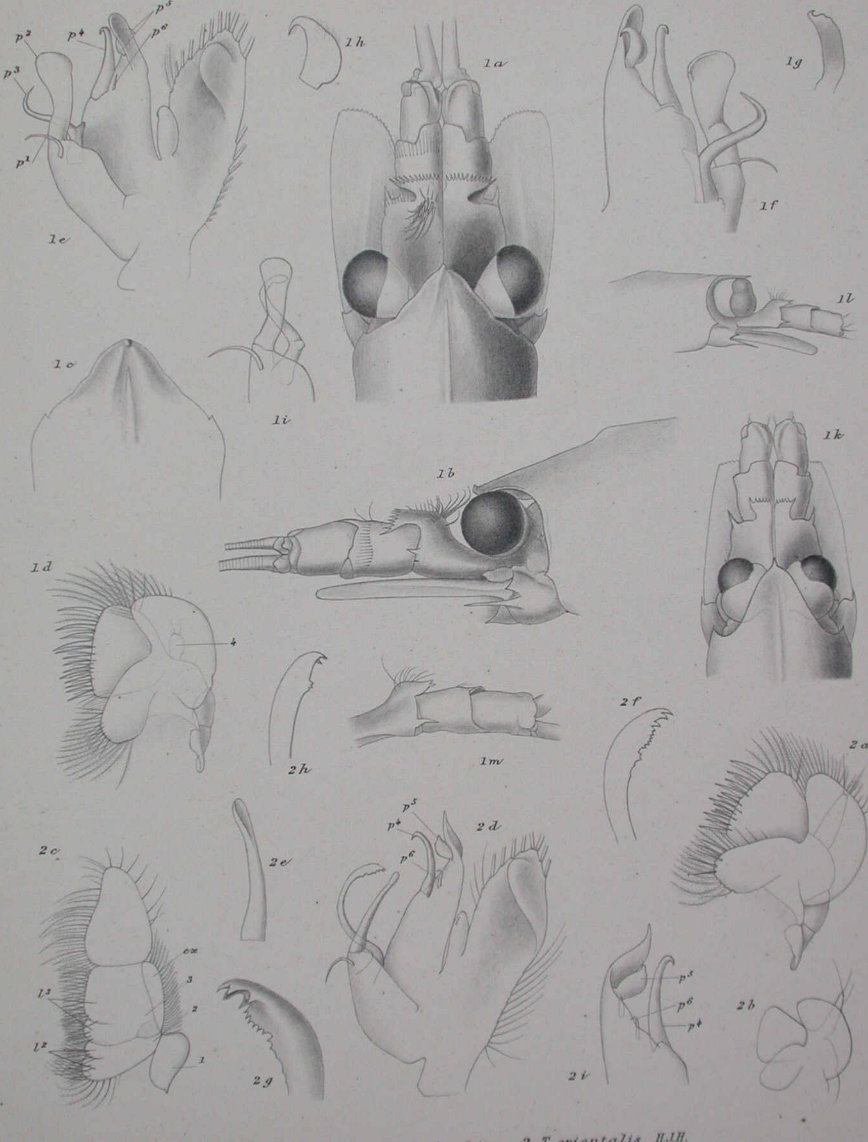
Fig. 2e. Terminal process of the same organ, from in front; × 53.

Fig. 2f. Distal part of the proximal process of the same organ, from behind; × 86.

Fig. 2g. Distal part of the proximal process of the same organ, from in front; × 127.

Fig. 2h. Distal part of the proximal process of left organ of another specimen, from behind; × 86.

Fig. 2i. Distal half of the median lobe of the organ shown in fig. 2d, seen from the inner side; × 50. The lettering as in fig. 2d.



1. *Thysanopoda pectinata* Ortm. 2. *T. orientalis* H.J.H.

T.N. Möller sc.

H.J. Hansen del.

PLATE 6.

Fig. 1. (?) **Thysanopoda cornuta** ILLIG. Young.

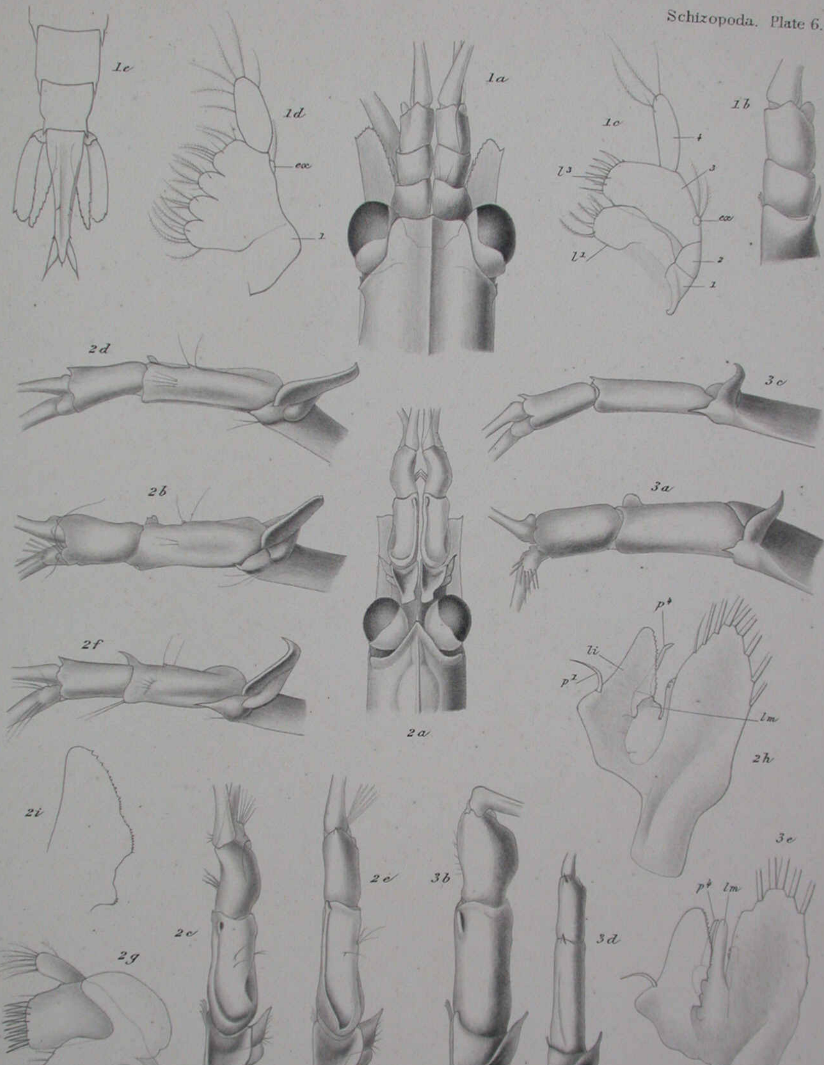
Fig. 1a. Anterior part of the single young specimen, 14.5 mm. long, from above; × 15.
Fig. 1b. Peduncle of right antennula, from above; × 31.
Fig. 1c. Left maxillula, from below; × 34. 1. first joint; l^1. lobe from first joint; 2. second joint; 3. third joint; l^3. lobe of third joint; 4. fourth joint or palp; ex. exopod.
Fig. 1d. Left maxilla, from below; × 34. 1. first joint; ex. exopod.
Fig. 1e. Posterior part of abdomen, from above; × $\frac{19}{2}$.

Fig. 2. **Nyctiphanes simplex** H. J. HANSEN.

Fig. 2a. Anterior part of an adult male, from above; × 16.
Fig. 2b. Left antennula of a male, from the outer side; × 27.
Fig. 2c. Right antennula of a male, from above; × 26.
Fig. 2d. Left antennula of an adult female, from the outer side; × 28.
Fig. 2e. Right antennula of an adult female, from above; × 27.
Fig. 2f. Left antennula of an immature specimen, from the outer side; × 28.
Fig. 2g. Left maxillula of a female, from below; × 58.
Fig. 2h. Left copulatory organ, unrolled and seen from behind; × 80. li. inner lobe; lm. median lobe; p^1. spine-shaped process; p^4. lateral process.
Fig. 2i. Major distal part of the inner lobe of the same organ, from behind; × 143.

Fig. 3. **Nyctiphanes australis** G. O. SARS.

Fig. 3a. Left antennula of the adult male, from the outer side; × 22.
Fig. 3b. Right antennula of the same male, from above; × 22.
Fig. 3c. Left antennula of the adult female, from the outer side; × 27.
Fig. 3d. Right antennula of the same female, from above; × 24.
Fig. 3e. Left copulatory organ, unrolled and seen from behind; × 58. lm. median lobe; p^4. lateral process.



1. Thysanopoda cornuta Illig (Young). 2. Nyctiphanes simplex H.J.H.

3. N. australis G.O.S.

H.J. Hansen del. T.N. Möller sc.

PLATE 7.

Fig. 1. **Nyctiphanes simplex** H. J. Hansen. Young.

Fig. 1a. Anterior part of a young specimen measuring 7 mm. in length, from above; × 33. The setae of left antennula omitted.

Fig. 1b. Left antennula of the specimen shown in the preceding figure, from the outer side; × 48.

Fig. 2. **Euphausia eximia** H. J. Hansen.

Fig. 2a. Anterior part of the body of an adult male, from above; × 14. The setae on left antennula omitted.

Fig. 2b. Peduncle of left antennula of an adult male, from the outer side; × 25.

Fig. 2c. Major part of the peduncle of right antennula of a male, from above; × 25.

Fig. 2d. Distal part of second joint of the peduncle of right antennula of another specimen, a female, from above; × 27.

Fig. 2e. Left copulatory organ, unrolled and seen from behind; × 47. p^2. terminal process; p^3. proximal process; p^4. lateral process.

Fig. 2f. Inner lobe of left copulatory organ of another specimen, from the inner side; × 50. Lettering as in fig. 2e.

Fig. 2g. Median lobe of left copulatory organ of a large specimen, from the inner side; × 42. p^4. lateral process.

Fig. 3. **Euphausia recurva** H. J. Hansen.

Fig. 3a. Anterior part of the body of an adult male, from above; × 23. The setae on left antennula omitted.

Fig. 3b. Left antennular peduncle of an adult male, from the left; × 39.

Fig. 3c. Major part of the peduncle of right antennula of an adult male, from above; × 36.

Fig. 3d. Left antennular peduncle of an adult female from Lat. 34° 50′ S., long. 25° 30′ E., from the outer side; × 25.

Fig. 3e. Major part of the peduncle of right antennula of the adult female from Lat. 34° 50′ S., long. 25° 30′ E., from above; × 22.

Fig. 3f. Left copulatory organ, unrolled and seen from behind; × 77.

Fig. 3g. Distal part of the terminal process of the organ shown in fig. 3f, from behind; × 140.

Fig. 3h. Terminal process of left organ of another male, from the inner side; × 130.

Fig. 3i. Terminal part of the proximal process of the organ shown in fig. 3f, from behind; × 150.

Fig. 3k. Terminal part of the proximal process of the left organ of another male from Sta. 4576, from behind; × 150.

Fig. 3l. Proximal process of left copulatory organ of a male from Lat. 34° 50′ S., long. 25° 30′ E., from behind; × 80.

Fig. 3m. Terminal part of the proximal process shown in fig. 3l, from behind; × 150.

Fig. 3n. Terminal part of the proximal process of left copulatory organ of another male from Lat. 34° 50′ S., long. 25° 30′ E., from behind; × 150.

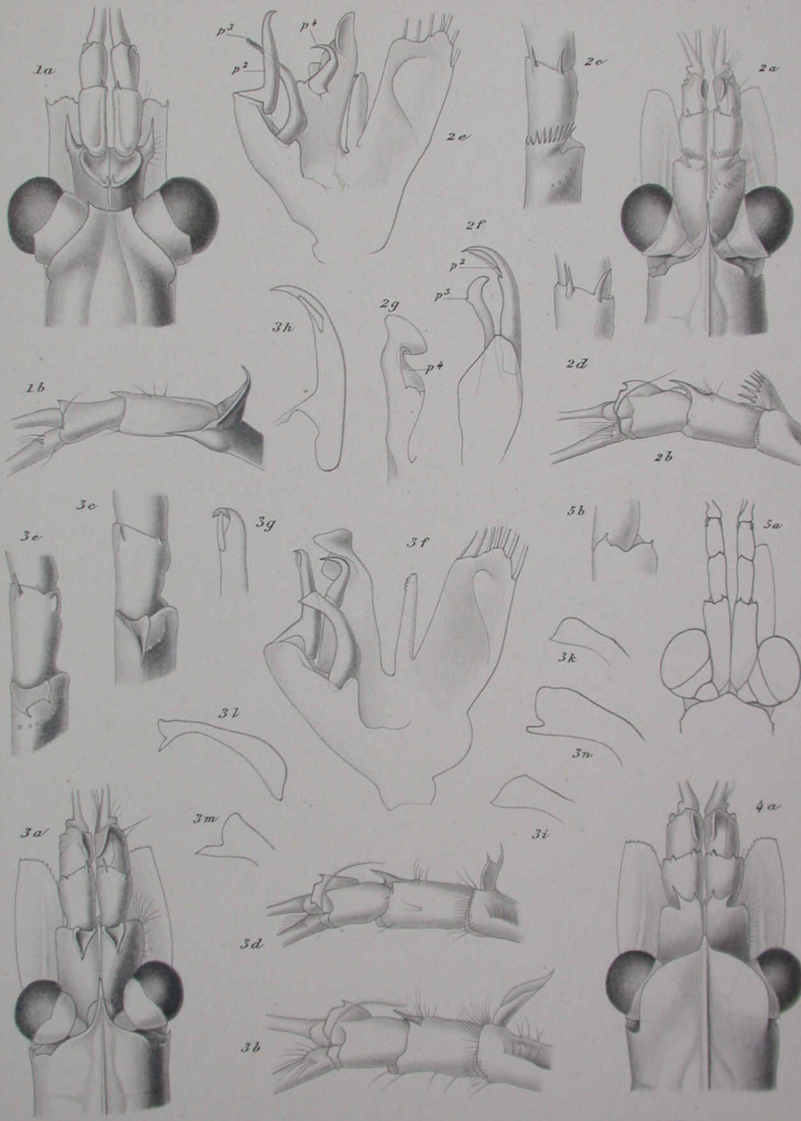
Fig. 4. **Euphausia diomedeae** Ortmann.

Fig. 4a. Anterior part of the body of a male from Sta. 4721, having the rostral plate strongly expanded and the rostrum short; from above; × 15.

Fig. 5. **Euphausia pacifica** H. J. Hansen.

Fig. 5a. Anterior part of a slightly more than half-grown specimen, from above; × 19.

Fig. 5b. Terminal part of the proximal joint with the basal part of second joint of right antennular peduncle of the specimen shown in fig. 5a, from above; × 50.



1. *Nyctiphanes simplex* H.J.H. (Young). 2. *Euphausia eximia* H.J.H.
3. *E. recurva* H.J.H. 4. *E. diomedeæ* Ortm. 5. *E. pacifica* H.J.H.

H.J. Hansen del. T.N. Møller sc.

PLATE 8.

Fig. 1. **Euphausia brevis** H. J. Hansen.

Fig. 1a. Anterior part of the body of a male, from above; × 32.
Fig. 1b. Left antennular peduncle of a male, from the outer side; × 47.
Fig. 1c. Major part of right antennular peduncle of a male, showing the terminal part of first joint with its lobe, and the whole second joint, from above; × 47.
Fig. 1d. Left copulatory organ, unrolled and seen from behind; × 87.
Fig. 1e. Proximal process of the organ shown in the preceding figure, from behind; × 150.
Fig. 1f. Inner lobe of left copulatory organ of another male, seen from the inner side; × 141.
Fig. 1g. Distal part of the terminal process of the lobe exhibited in fig. 1f, seen from the inner side and a little from in front; × 141.

Fig. 2. **Euphausia gibba** G. O. Sars.

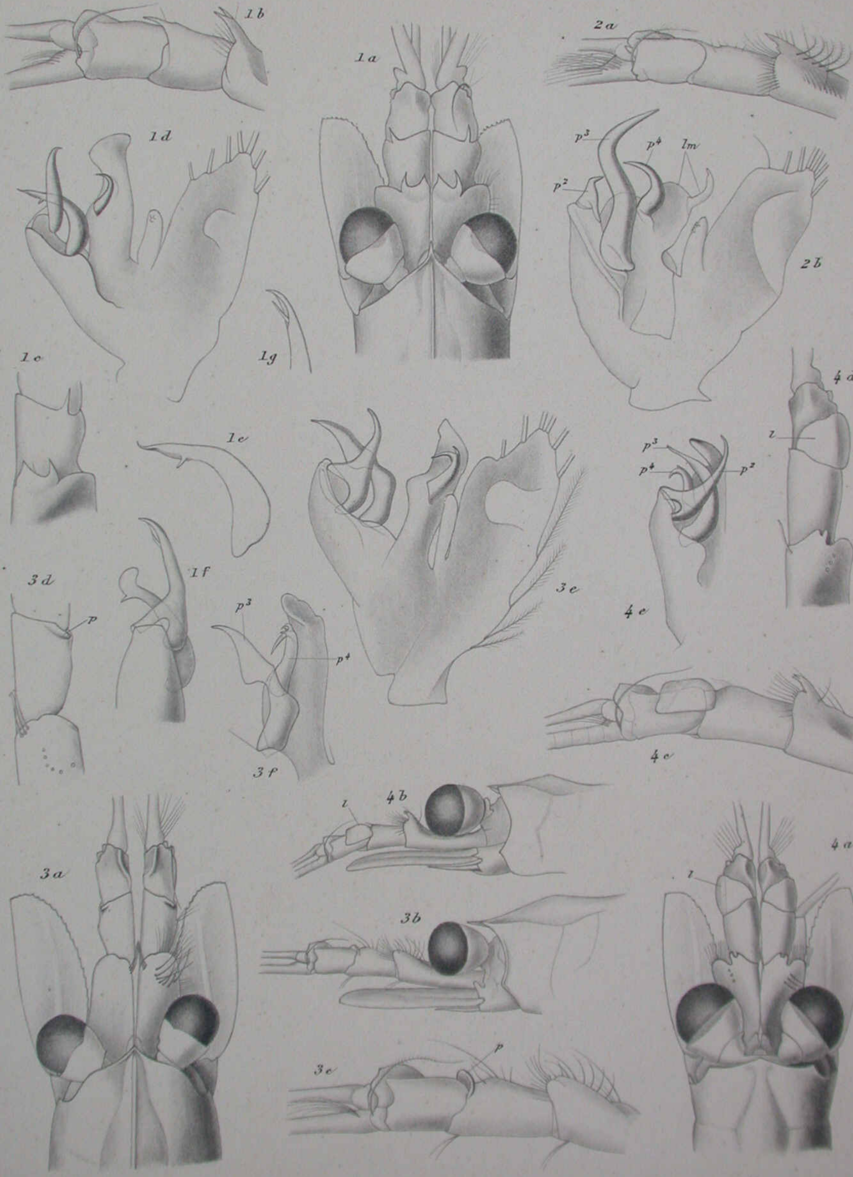
Fig. 2a. Left antennular peduncle of a male, from the outer side; × 25.
Fig. 2b. Left copulatory organ, unrolled and seen from behind; × 52. p^2. terminal process; p^3. proximal process; p^4. lateral process; lm. median lobe, with its finger-like distal part.

Fig. 3. **Euphausia distinguenda** H. J. Hansen.

Fig. 3a. Anterior part of the body of a male, from above; × 20. The setae on left antennula omitted.
Fig. 3b. Anterior part of the body of a male, from the left side; × 17.
Fig. 3c. Left antennular peduncle of the same male, from the left side; × 35. p. ear-like process at the distal outer upper angle of second joint.
Fig. 3d. Major part of right antennular peduncle of a male, showing the distal part of first joint and the whole second joint, from above; × 35. p. ear-like process at the distal outer upper angle of second joint.
Fig. 3e. Left copulatory organ, unrolled and seen from behind; × 77.
Fig. 3f. Proximal process, p^3., and median lobe with the lateral process; p^4., of left copulatory organ of another specimen, seen from the inner side; × 90.

Fig. 4. **Euphausia lamelligera** H. J. Hansen.

Fig. 4a. Anterior part of the body of a male, from above; × 23. l. movable lamella from second joint.
Fig. 4b. Anterior part of the body of a male, from the left side; × 18.
Fig. 4c. Left antennular peduncle of a male, from the outer side; × 38.
Fig. 4d. Right antennular peduncle of a male, from above; × 36. l. movable lamella from the end of second joint. The setae omitted.
Fig. 4e. Inner and median lobes of left copulatory organ, seen from the inner side; × 84. p^2. terminal process; p^3. proximal process; p^4. lateral process.



1. Euphausia brevis H.J.H. *2. E. gibba* G.O.S. *3. E. distinguenda* H.J.H.

PLATE 9.

Fig. 1. **Euphausia lamelligera** H. J. Hansen.

Fig. 1a. Left copulatory organ, unrolled and seen from behind; × 84.

Fig. 2. **Euphausia gibboides** Ortmann.

Fig. 2a. Anterior part of the body of a male, from above; × 12. The setae on left antennular peduncle omitted.

Fig. 2b. Anterior part of the body of a male, from the left side; × 10. Setae on the antennula omitted.

Fig. 2c. Left antennular peduncle of same male, from the outer side; × 21.

Fig. 2d. Right antennular peduncle, excepting the major part of third joint, of a male, from above; × 20.

Fig. 2e. Left copulatory organ, unrolled and seen from behind; × 34. a. protruding, triangular, acute tubercle from the median lobe; p^2. terminal process; p^3. proximal process; p^4. lateral process.

Fig. 2f. Distal part of the proximal process of the same organ, from behind; × 95.

Fig. 2g. Left copulatory organ almost in the natural position of another male, from the inner side; × 34. Lettering as in fig. 2e.

Fig. 2h. Distal part of the proximal process of the organ shown in fig. 2g, from the inner side; ×95.

Fig. 3. **Euphausia mucronata** G. O. Sars.

Fig. 3a. Anterior part of the body of a male, from above; × 13. The setae on left antennula omitted.

Fig. 3b. Anterior part of the body of a male, from the left side; × $\frac{23}{2}$. Setae on the left antennula omitted. The frontal plate too obtuse.

Fig. 3c. Left antennular peduncle of the specimen shown in fig. 3b, from the outer side; × 23.

Fig. 3d. Right antennular peduncle of a male, from above; × 22. Most of the setae omitted.

Fig. 3e. Left copulatory organ, unrolled and seen from behind; × 46. p^2. terminal process; p^3. proximal process; p^4. lateral process; p^5. additional process.

Fig. 3f. Proximal process of the organ shown in fig. 3e, from behind; × 80.

Fig. 3g. Inner and median lobes of left organ of another male, seen from the inner side; × 57. Lettering as in fig. 3e.

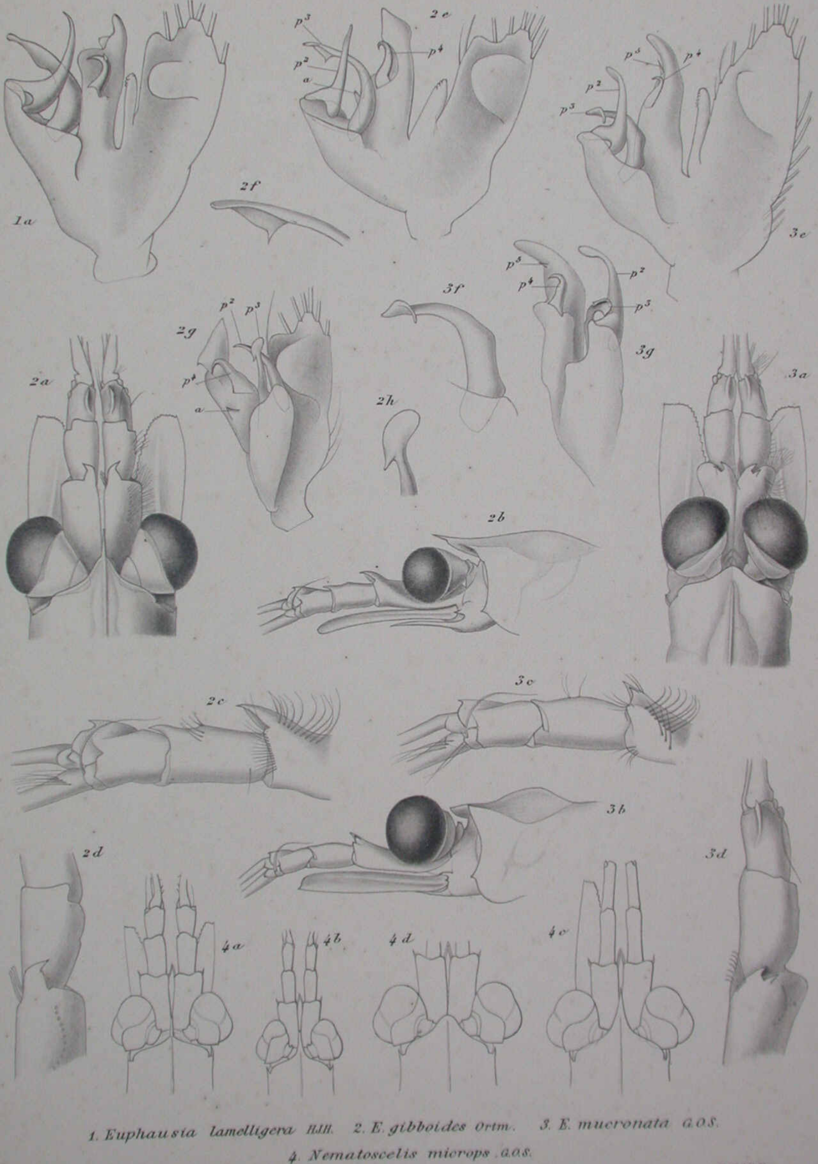
Fig. 4. **Nematoscelis microps** G. O. Sars.

Fig. 4a. Anterior part of an adult male, from above; × 9.

Fig. 4b. Anterior part of an immature male, from above; × 9.

Fig. 4c. Anterior part of an adult female, from above; × 9.

Fig. 4d. Anterior part — the majority of the antennular peduncles omitted — of another adult female in order to show the anomalous rostrum, from above; × 9.



1. *Euphausia lamelligera* H.J.H. 2. *E. gibboides* Ortm. 3. *E. mucronata* G.O.S.
4. *Nematoscelis microps* G.O.S.

H.J. Hansen del.
T.N. Möller sc.

PLATE 10.

Fig. 1. **Nematoscelis microps** G. O. Sars.

Fig. 1a. Left maxilla of a female, from below; × 33. All setae omitted.

Fig. 1b. Inner and median lobes of left copulatory organ of an immature male, from behind; × 83.

Fig. 2. **Nematoscelis gracilis** H. J. Hansen.

Fig. 2a. Left maxilla of a female, from below; × 33. All setae omitted.

Fig. 3. **Nematoscelis tenella** G. O. Sars.

Fig. 3a. Left maxillula of a female, from below; × 40.

Fig. 3b. The distal nearly spiniform seta from the end of the palp of the maxillula shown in fig. 3a, from below; × 160.

Fig. 3c. Left maxilla of the same female, from below; × 40.

Fig. 4. **Nematobrachion boopis** Calman.

Fig. 4a. Left maxillula of a female, from below; × 26.

Fig. 4b. Left maxilla of the same female, from below; × 26.

Fig. 4c. The inner, the median and the auxiliary lobes of left copulatory organ, unrolled and seen from behind; × 44. p^1. spine-shaped process; p^2. terminal process; p^3. proximal process; p^4. lateral process; p^5. additional process.

Fig. 4d. The inner lobe of the same copulatory organ, seen from the outer side; × 80. The lettering as in fig. 4c.

Fig. 5. **Nematobrachion flexipes** (Ortmann).

Fig. 5a. Anterior part of the body of a male, from above; × 12. The setae on left antennula omitted.

Fig. 5b. Anterior part of the body of the same male, from the left side; × 10.

Fig. 5c. Left antennular peduncle of the same male, from the outer side; × 20.

Fig. 5d. Distal part of second peduncular joint, with the basal portion of third joint of left antennula of a female, from above; × 24.

Fig. 5e. Left maxillula of a female, from below; × 32.

Fig. 5f. Left maxilla of the same female, from below; × 32.

Fig. 5g. The abdominal segments of a female, from the left side; $\times \frac{16}{3}$.

Fig. 5h. Left copulatory organ, unrolled and seen from behind; × 45.

Fig. 5i. The inner lobe with its three processes of left copulatory organ of another male, from behind; × 90.

Fig. 5k. The inner lobe shown in fig. 5i, seen from the outer side; × 90. The lettering as on fig. 4c and fig. 4d.

Fig. 5l. The distal portion of the proximal process of the lobe shown in fig. 5i, from behind; × 220.

Fig. 5m. The distal portion of the proximal process of left copulatory organ of a third male, seen as from the end of the inner lobe; × 220.

Fig. 6. **Nematobrachion sexspinosus** H. J. Hansen.

Fig. 6a. Left maxillula of a male, from below; × 25. pex. pseudexopod.

1. *Nematoscelis microps* G.O.S. 2. *N. gracilis* H.J.H. 3. *N. tenella* G.O.S.
4. *Nematobrachion boopis* Calm. 5. *N. flexipes* Ortm. 6. *N. sexspinosus* H.J.H.

H.J. Hansen del. T.N. Møller sc.

PLATE 11.

Fig. 1. **Nematobrachion sexspinosus** H. J. Hansen.

Fig. 1a. Anterior part of the body of a male, from the left side; $\times \frac{15}{2}$.
Fig. 1b. Left antennular peduncle of the same male, from the outer side; $\times$ 13.
Fig. 1c. Distal part of second peduncular joint with the basal part of third joint of left antennula of the same male, from above; $\times$ 20.
Fig. 1d. Left maxilla of a male, from below; $\times$ 25.
Fig. 1e. The four posterior abdominal segments of a male, from the left side; $\times \frac{9}{2}$.
Fig. 1f. Major part of the same segments as shown in fig. 1e, from above; $\times$ 7.
Fig. 1g. The inner, the median, and the auxiliary lobes of left copulatory organ, unrolled and seen from behind; $\times$ 40.
Fig. 1h. Inner lobe with its processes of the same copulatory organ, from behind; $\times$ 78.
Fig. 1i. Distal half of the terminal process of the same organ, seen from the outer side; $\times$ 80.

Fig. 2. **Stylocheiron carinatum** G. O. Sars.

Fig. 2a. Left maxillula of a female, from below; $\times$ 58.
Fig. 2b. Left maxilla of the same female, from below; $\times$ 58.

Fig. 3. **Stylocheiron suhmii** G. O. Sars.

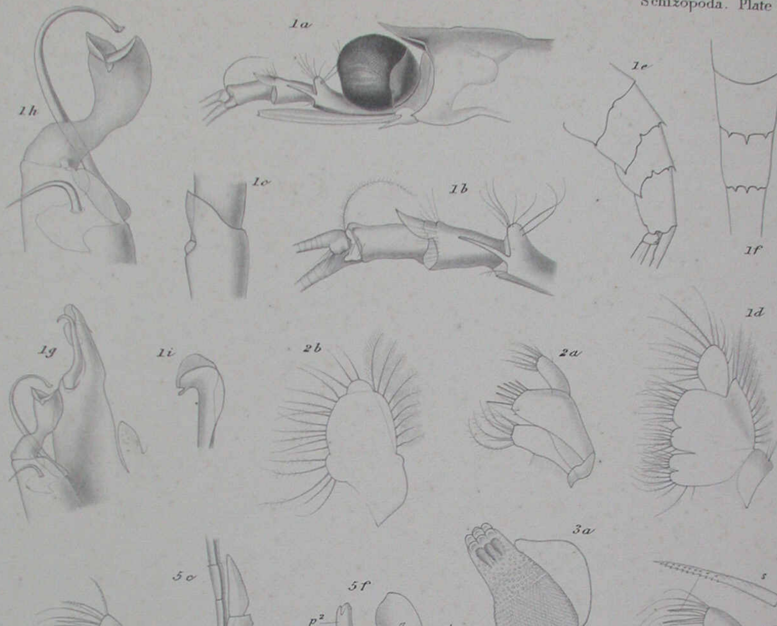
Fig. 3a. Left eye with stalk of a male, seen with the light transmitted and the lower half somewhat diagrammatic, from the outer side; $\times$ 46.
Fig. 3b. Sixth abdominal segment of a male, from the outer side; $\times$ 46.

Fig. 4. **Stylocheiron longicorne** G. O. Sars.

Fig. 4a. Left maxillula of a female, from below; $\times$ 42.
Fig. 4b. Left maxilla of the same female, from below; $\times$ 42.

Fig. 5. **Stylocheiron abbreviatum** G. O. Sars.

Fig. 5a. Anterior part of an adult male (from Sta. 4734), from the left side; $\times$ scarcely 9. a^2. last peduncular joint of the endopod of the left antenna; l^2. second left thoracic leg — the distal half with the chela omitted; mxp. left maxilliped.
Fig. 5b. Third peduncular joint with both flagella of left antennula of the same male, from the outer side; $\times$ 15.
Fig. 5c. Third peduncular joint with the whole upper flagellum and the major part of the lower flagellum of the male left antennula shown in fig. a, from above; $\times$ 15.
Fig. 5d. Left maxillula of a female from below; $\times$ 38. s. the distal spine on the end of the palp more highly magnified, viz. $\times$ 128.
Fig. 5e. Left maxilla of the same female, from below; $\times$ 38.
Fig. 5f. The inner and the median lobes of left copulatory organ, unrolled and seen from behind; $\times$ 185. p^1. spine-shaped process; p^2. terminal process; p^3. proximal process; p^4. lateral process.



1. Nematobrachion sexspinosus H.J.H. 2. Stylocheiron carinatum G.O.S.

3. S. Suhmii G.O.S. 4. S. longicorne G.O.S. 5. S. abbreviatum G.O.S.

T. N. Möller sc.

H. J. Hansen del.

PLATE 12.

LARVAL STAGES OF EUPHAUSIACEA.

Fig. 1. **Thysanopoda** sp. (*T. monacantha* ORTMANN. aff.).

Fig. 1a. First Furcilia-stage; length 3.7 mm. The animal, from the left; × 21. mxp. maxilliped.

Fig. 1b. Anterior part of the same larva, from above; × 37. Setae and antenna on the right side omitted.

Fig. 1c. Posterior part of abdomen with right uropod of the same larva, from above; × 30.

Fig. 1d. Posterior part of telson of the same larva, from above; × 80.

Fig. 1e. Last Furcilia-stage; length 5.0 mm. The animal, from the left side; × 21. mxp. maxilliped.

Fig. 1f. Anterior part of the specimen shown in fig. 1e, from above; × 28. The distal part of left antennula, right antenna, and most setae omitted.

Fig. 1g. Distal part of telson of the specimen shown in fig. 1e, from above; × 87.

Fig. 2. **Euphausia distinguenda** H. J. HANSEN.

Fig. 2a. Anterior half of a larva in the last Furcilia-stage; from the left; × 35. The animal is 2.8 mm. long.

Fig. 2b. Anterior part of the same specimen, from above; × 49. The setae on right antennula omitted.

Fig. 2c. Distal part of telson of the same specimen, from above; × 82.

Fig. 3. **Nyctiphanes simplex** H. J. HANSEN.

Fig. 3a. Cephalothorax and the three anterior abdominal segments of a larva in the intermediate Furcilia-stage, from the left; × 26. mxp. maxilliped. The animal is 3.2 mm. long.

Fig. 3b. Anterior part of the same specimen, from above; × 30.

Fig. 3c. Posterior part of abdomen of the same specimen, from above; × 30. Right uropod omitted.

Fig. 3d. Distal part of telson of the same specimen, from above; × 83.

Fig. 3e. Posterior part of abdomen with left uropod of a larva in last Furcilia-stage, from above; × 29. The animal is 3.7 mm. long.

Fig. 3f. Distal part of the telson shown in fig. 3e, from above; × 83.

Fig. 4. **Pseudeuphausia latifrons** G. O. SARS.

Fig. 4a. Anterior part of a larva in a Cyrtopia-stage, from above; × 32. The animal is 3.2 mm. long.

Fig. 4b. Posterior part of abdomen with right uropod of the same larva, from above; × 32.

Fig. 5. **Nematoscelis microps** G. O. SARS.

Fig. 5a. Larva in the first Cyrtopia-stage, from the right; × 25. The animal is 3.5 mm. long.

Fig. 5b. Head with eyes and antennulae of the same specimen, from above; × 39.

Fig. 5c. End of telson of the same specimen, from above; × 93.

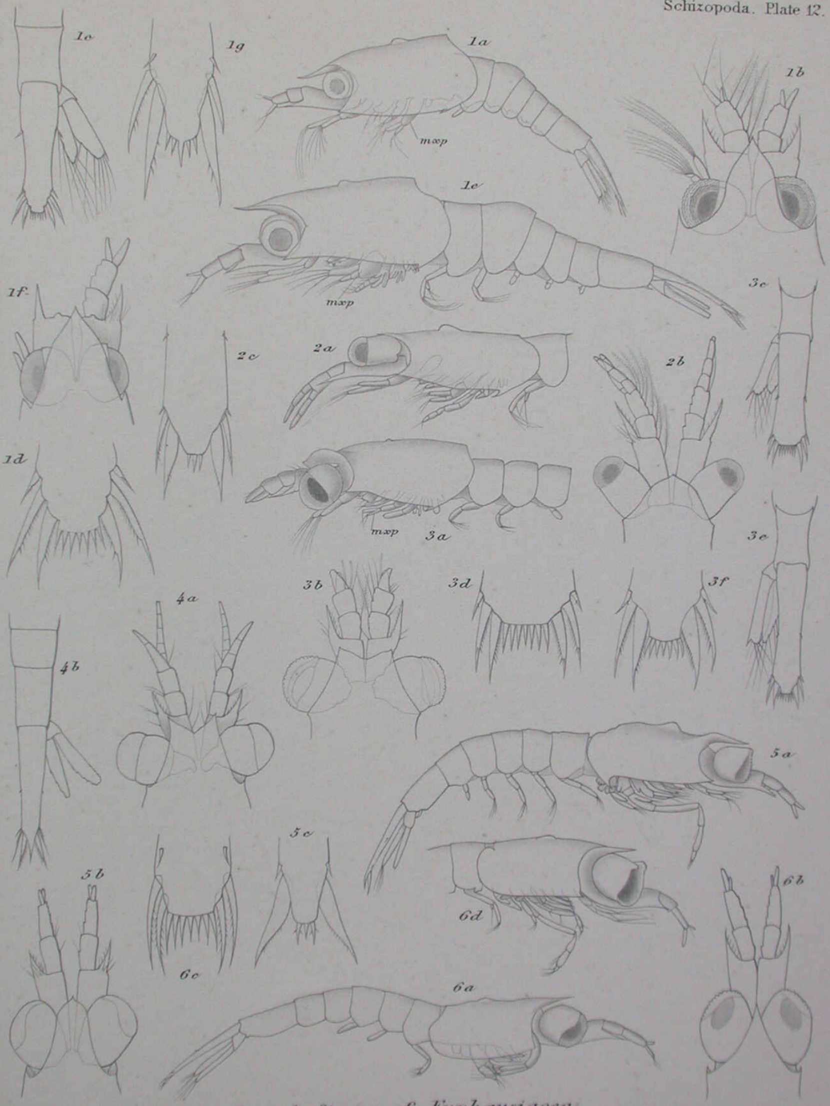
Fig. 6. **Stylocheiron carinatum** G. O. SARS.

Fig. 6a. Larva in the intermediate Furcilia-stage, from the right; × 30. The animal is 2.8 mm. (On possible inaccuracies in the figure see page 293).

Fig. 6b. Head with eyes and antennulae of the same specimen, from above; × 46. The setae omitted.

Fig. 6c. Posterior part of telson of the same specimen, from above; × 140.

Fig. 6d. Cephalothorax and first abdominal segment of a larva in the last Furcilia-stage, from the right; × 30. The animal is 3 mm. long.



Larval Stages of Euphausiacea.

1. Thysanopoda sp. 2. Euphausia distinguenda. 3. Nyctiphanes simplex.
4. Pseudeuphausia latifrons. 5. Nematoscelis microps. 6. Stylocheiron carinatum.

T.N. Möller sc.

H.J. Hansen del.